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CANADIAN SSNS AND THEIR EMPLOYMENT

by

Karen V. Brown

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Thesis Advisor James J. Tritten

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Canadian SSNs and Their Employment

by

Karen V. Brown
Lieutenant, United States Navy
B.S., Texas A&M University, 1977

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requirements for the degree of

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ABSTRACT

Through the public forum of the 1987 White Paper, the government of Canada announced its intentions to make major changes to Canada's military and to her defense posture. Among other things, the White Paper publicized the planned acquisition of ten to twelve nuclear powered submarines. The government hopes that these submarines will help assert Canada's claim of sovereignty in the waters of the Canadian Archipelago including the Northwest Passage. The United States considers the Northwest Passage to be a strait used for international navigation and subject to the right of transit passage. The SSNs will also have a clearly martial role in protecting Canada's economic interests and her national security responsibilities in the Atlantic, the Pacific, and the Arctic Oceans. This thesis examines these reasons behind Canada's decision to acquire an SSN fleet and their potential employment.

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I. CANADA INTENDS TO ACQUIRE SSNS--WHY?

In June 1987, the Canadian government published a White Paper on national defense. While briefly addressing the current status of the Canadian Forces, the 1987 White Paper was a document which described the future of the armed forces as proposed be the Mulroney government. These proposals include an increase in defense spending, abandonment of the commitment to reinforce Norway, and the acquisition of nuclear-powered submarines (SSN). While the first intention was well received by Canada's allies, the latter two were not. Of these, it is the proposed addition of nuclear-powered submarines to the Canadian navy which has aroused the greatest interest in the United States and has the potential to have the greatest impact on the relationship between the US and Canada.

This is not the first time Canada has considered acquiring nuclear-powered submarines. In the late 1950's, Canada decided against such submarines and instead purchased three Oberon class diesel submarines from Great Britain. Last year the decision went the other other way and the choice was for nuclear-powered submarines over conventional ones. In part, this was due to the fact that nuclear power technology has matured and is today more affordable than it was thirty years ago. However, the over-riding consideration which led to this decision was the fact that given the national security and defense needs of Canada in all three oceans--the Atlantic, the Pacific, and the Arctic--which border her shores, the nuclear powered submarine is far superior to any other platform in its ability to meet those security and defense requirements.

Canada's economic ties to the Asia-Pacific region have grown tremendously over the past two decades. Japan is now Canada's second leading trading partner surpassed only by the United States. The 1987 White Paper identifies a significant change in policy by placing increasing importance on this region in recognition of its economic and security value. At the same time, Soviet activity in the area has also increased. The threat of sea launched cruise missiles (SLCM) from the Pacific has placed new emphasis on anti-submarine warfare (ASW). Protection of the sea lines of communication (SLOC) in the Pacific is of vital interest to Canada and the United States.

Canada continues to consider her security to be intimately bound to the security of western Europe and to NATO. For this reason, her Atlantic fleet will continue to get first priority. As in the past, Canada's NATO maritime role is escort duty for the

convoys carrying supplies necessary for NATO's survival in times of conflict. Protection of the Atlantic SLOCs as well as the Pacific SLOCs requires effective ASW capabilities to meet the threat of Soviet submarines. This responsibility has lead to the decision to acquire SSNs. The best ASW weapon is considered to be another submarine and the SSNs were judged to be superior to conventional submarines in meeting Canada's defense needs.

In the Arctic Ocean as elsewhere, the principal threat to Canada and North America is the Soviet Union and the Soviet navy's submarines. This is recognized by both Canada and the United States and is the reason why US SSNs patrol under the ice at the North Pole. The proposed Candadian SSNs would share in this responsibility but there's a twist. While Canada's national security and defense needs alone are sufficient to drive the decision to acquire nuclear-powered submarines, it is Canada's claim that the Arctic's Northwest Passage are internal or territorial Canadian waters and the potential use of the proposed SSNs to "enforce" that claim which has received the most attention by the Canadian press, officials in the Canadian government, and the US Department of Defense. It is difficult for many in the US to realize how emotional this issue is for the Canadian public. The claim to sovereignty in the Northwest Passage is not only a legal issue but is bound up in national pride and national identity. In an effort to ensure Canadian sovereignty, in 1985, the House of Commons made a declaration of straight baselines encompassing the Canadian (Arctic) Archipelago. This action was not supported by international law. The United States does not recognize this declaration and continues to consider that portion of the Northwest Passage which passes through the Canadian Archipelago as international waters or high seas. The United States stands firmly committed to the principle of freedom of the seas. It is of the utmost importance that US warships (including submarines) continue to have unimpeded access to the world's major bodies of water including--or perhaps especially--the Arctic Ocean. Neither side in this matter is likely to substantially change its position. And yet, if both possess the ability to transit this often ice-covered waterway in submerged nuclear-powered submarines, then it is absolutely essential that these two close neighbors and allies be able to work together. Resolving the legal question one way or the other is not nearly as important as being able to effectively work with each other to ensure the safety and security of North America.

Chapter II of this thesis looks at the 1987 White Paper and its proposed changes to the Canadian military's employment, particularly the decision to abandon the Canadian

commitment to reinforce Norway and the decision to acquire SSNs. Chapter III addresses the issue of sovereignty in the Canadian Archipelago. This issue is examined under the parameters of the 1958 Convention on the Territorial Sea and the Contiguous Zone, the 1982 Law of the Sea Convention, and customary international law. Chapter IV examines the maritime requirements of Canada in order to meet her national security and defense needs in the Atlantic in support of NATO, the Pacific, and the Arctic Oceans. The last chapter, Chapter V, provides some recommendations and looks at the type of working relationship between the United States and Canada which will best fulfill the mutual defense goals.

II. MATCHING CANADIAN COMMITMENTS AND CAPABILITIES--THE 1987 WHITE PAPER

For the first time since 1971 Canada has published a White Paper which addresses Canada's security policy and the contribution of the Canadian Forces to that policy. Rather than a document of facts it is a statement of intentions. For interested non-Canadians there are three important points or commitments:

1. Modernization of Canadian Forces and a strong promise of 2% real growth in defense spending per year.
2. Acquisition of ten to twelve nuclear-powered submarines and a three-ocean strategy.
3. Abandonment of the commitment to reinforce northern Norway.

A. CHANGES IN NATO COMMITMENTS

While justifiably proud of the professionalism and skill of the members of the Canadian Forces (CF), the White Paper also acknowledges the effect years of neglect has had on those armed forces. Of the NATO allies, Canada ranks third from the bottom ahead only of Denmark and Luxemburg in terms of defence spending as a percentage of GDP. It is somewhat embarrassing as Canada ranks as the third richest per capita. While the proposed increase in defense spending of 2% real growth a year is below the 3% goal NATO supports, it would nonetheless be a significant and very welcome improvement. If maintained for the full fifteen years addressed by the White Paper, it could greatly affect Canada's voice internationally and her standing within the alliance [Ref. 1: p. 46].

The government of Canada believes the only way her security needs can be met is within the collective security framework of NATO. The White Paper identifies central Europe as the center of gravity in the balance of power, the geographical focus of the conflict between East and West. Canada's continued support of NATO and the linkage of Canadian security with that of NATO are reiterated throughout the White Paper in the strongest possible terms. However, Canada also cuts a major commitment--the Canadian Air-Sea Transportable (CAST) brigade and two fighter squadrons assigned to the defense of Norway. This decision to abandon a twenty year commitment to reinforce Norway in the event of Soviet aggression is based on the need to eliminate the gap between commitment and capability. Canada's lack of theater-level logistics, lack

of medical support, the time necessary to deploy, and the inability of the CAST brigade to make an opposed landing combined with the difficulties of reinforcement and resupply brought her to this hard decision. Both the CAST brigade and the the fighter squadrons will be shifted to the central front, to southern Germany. Canada has softened the blow to Norway by agreeing to retain her commitment until an acceptable replacement is identified. Also, much of the pre-positioned equipment will remain in Norway for use by the Allied Command Europe Mobile Force AMF(L), the ACE brigade, a small mobile, multinational NATO task force to which Canada has a battalion commitment [Ref. 2: p. 63]. At present no ally has volunteered a brigade for Norway. Instead, the Norwegian government is apparently willing to take on battalions from several countries to reinforce Norwegian brigades in a crisis. These reinforcements will include a battalion of Bundeswehr troops; it will be the first time Norway has accepted West German combat troops on its soil since World War II. Interestingly, Norway's decision to accept a German combat force may create a problem for Finland. Finland signed a defense pact with the Soviet Union in 1948 which would allow the Soviets to march into Finland to challenge any perceived threat across Finnish territory from Germany and her allies. Moscow has already criticized NATO plans to send West German troops to Norway [Ref. 3: p. 30].

Canada's commitment to Norway was not only military but a political as well. While Canada cannot be accused of completely abandoning her political commitment to Norway, the political signal this decision to abandon Norway sends to the Soviet Union that is extremely troubling. Norway shares a 122 mile contiguous border with the Soviet Union. Soviet concentration of strategic (nuclear) and conventional forces on the Kola Peninsula is increasing. Over 60% of the Soviet strategic submarine force is stationed in this area which is due east of the Soviet-Norwegian border. Some experts claim the Kola Peninsula contains the largest concentration of modern military force anywhere in the world. It also provides important components of the Soviets' early warning and forward air defense systems. Therefore, it is not surprising that the Soviets have large troop emplacements in the area. As a result of Norway's precarious position on NATO's northern flank, a favorite initiation scenario for wargamers has long been a Soviet invasion of Norway across and down the Kola Peninsula. It should be obvious that a credible Norwegian defense, effective not only in wartime but also as a deterrent in times of peace, is vitally important not only to Norway but to all of NATO.

B. A MODERN NAVY

Nowhere is the need for modernization of the CF more apparent than the navy. At present the navy relies exclusively on vessels in commission or under construction in 1971. The newest ship is already fourteen years old. The oldest, at thirty-one years, is older than most of those who sail her. In 1963 there were forty-five major warships and ten minesweepers. Today there are only twenty-six warships including three diesel submarines and no minesweepers [Ref. 2: p. 44]. In 1983, a parliamentary committee reported that Canada's navy, the world's third largest after World War II, no longer could defend Canada's coastline [Ref. 4: p. 9]. Today Canada has embarked on a vigorous program of modernizing her navy.

The present day Canadian navy consists of about 10,000 "regular" personnel with an additional 3,300 in the primary reserve. These men and women operate and support a fleet consisting of four destroyer squadrons, nine maritime air squadrons, and a single submarine squadron. These units operate in anti-submarine warfare (ASW) task groups which conduct surveillance, protect vital shipping and support joint security operation with Canada's allies. Canada has naval bases on both coasts with the submarine squadron homeported on the east coast.

According to the 1987 White Paper, Canada intends to protect her economic and security interests in the three oceans contiguous to her shores--the Pacific, the Atlantic, and the Arctic Oceans. The Asia-Pacific region is becoming increasingly important to Canada. Trade with that area has shown an impressive increase and, in 1985, the port of Vancouver alone handled more cargo than Canada's entire east coast. In the Atlantic, Canada's traditional NATO responsibility is and continues to be the defense of convoys vital to the resupply of NATO and western Europe. In both the Atlantic and the Pacific, Canada must be able to defend the sea lines of communication (SLOC) between herself, her trading partners, and her allies. The Arctic Ocean presents a special challenge because much of it is ice covered. Only one platform can operate under the ice--a nuclear powered submarine. In all three of these oceans, it is Soviet submarines which offer the greatest threat. It is in Canada's own best interest and the best interest of her allies that Canada be able to conduct her ASW role in the most effective way possible. An excellent ASW platform in open ocean and the only one which can operate under the ice is the nuclear powered submarine. This is the conclusion reached by the Canadian government as Canada's tiny fleet of diesel submarines rapidly reaches the end of its service life.

Under the Tribal Class Update and Modernization Project (TRUMP) four destroyers are currently undergoing extensive modernization. They are intended to provide area air defense and command and control for anti-submarine warfare (ASW) task groups. At present six patrol frigates are under construction and an additional six are planned. These warships also have an ASW role and will carry modern helicopters to increase the distance and speed at which they can prosecute submarines. The process to select a new helicopter to replace the aging Sea King helicopters is already underway. Through these programs the Canadian Navy will greatly enhance its airborne and surface capabilities. Table 1 shows the current status of Canadian maritime forces.

Table 1. CANADA'S MARITIME FORCES

Personnel		
Regular	10,000	
Primary Reserve	3,300	
Major Operational Units		
Destroyer Squadrons	4	
Submarine Squadrons	1	
Maritime Air Squadrons	9	
Bases in Canada	3	
Principal Equipment	East Coast	West Coast
Frigates Destroyers	12	8
Reserve Frigates Destroyers	1	2
Submarines	3	
Replenishment Ships	2	1
Patrol Aircraft	29	7
Helicopters	31	4
Diving Support	1	
Training Vessels	21	10

[Ref. 2: p. 30]

C. THE DECISION TO ACQUIRE NUCLEAR-POWERED SUBMARINES

A balanced, more effective fleet is the combination of not only airborne and surface assets but also subsurface ones all working together to produce a synergistic effect. The subsurface asset selected by the Canadians is the nuclear-powered attack submarine (SSN). The final result will give them a ratio of surface combatants to sub-surface units

(excluding ballistic missile submarines) similar to that of Britain which is 1.7 to 1 [Ref. 5: p. 5]. This choice has been much criticized within Canada and abroad.

During the 1984 election campaign, now Prime Minister Mulroney promised to vigorously reverse a twenty year decline in Canada's military spending. Instead of a 6% real increase as promised, if the proposals of the White Paper are fully implemented, there will be at most an increase of 3-4% over the next fifteen to twenty years. There is opposition to the proposals made in the White Paper and the proposed SSN fleet in particular for a variety of reasons.

Some believe the Canadian public will not support even a modest increase in defense expenditures if it impacts on monies spent on social programs. According to one professor of political science at Carleton University in Ottawa and an activist in the Liberal Party , the money intended for the SSNs would be far better spent on social programs specifically child care programs and on reducing Canada's budget deficit [Ref. 6]. The two oppostion parties, the Liberal and New Democratic Party (NDP), are criticizing the proposed SSNs as becoming part of a new aggressive American policy of seeking to intercept Soviet submarines in their home waters [Ref. 7: p. B5]. A variation on this theme is the claim that SSNs are strictly an offensive weapon and are not in keeping with the generally defensive posture of Canada's military.

It has also been argued that the SSNs are simply too expensive and could end up costing $10 billion (the government has estimated the cost at $8 billion) which is more than one year's total military budget in Canada [Ref. 8: p. 21]. It is felt that passive sonar systems combined with surface ships, diesel submarines, and aircraft could fulfill the same role at less expense.

For other Canadians the word "nuclear" conjures up images of evil and an almost automatic opposition to the SSNs. The notion that nuclear submarines are those having nuclear weapons is far from the truth. Canada's nuclear *powered* submarines will carry the same *non-nuclear* weapons originally planned for the conventionally powered submarines. The SSNs are not nuclear armed, they are nuclear propelled.

Other options were thoroughly examined but fell short in their ability to do the job required. The job in peacetime is ocean surveillance. During time of war, the primary mission would be intercepting and prosecuting hostile submarines. For these roles diesel submarines, the use of mines, as well as SSNs were carefully considered.

As early as 1958 Canada had considered acquiring nuclear-powered submarines. At that time conventional boats were a bargain and won approval. Three Oberon-class

diesel-electric submarines were purchased and commissioned between 1964 and 1968. These now twenty year-old boats are the whole of Canada's present submarine force. Still, they filled a much needed primary ASW and secondary anti-surface role. The diesel boat is an extraordinarily quiet platform which is difficult to detect by acoustic methods while on station (on batteries), moving very little, and utilizing its passive sonar to monitor the movement of others. However, its operational parameters allow only sixty day patrol without additional logistical support. The diesel submarine is a vessel of position and requires a lot of time to transit from one zone of operations to another. Another limitation is its inability to maintain submerged high speed for long periods of time. Even more debilitating, the diesel submarine must surface or come to "snorkeling" depth with relative frequency in order to breathe air into its generators which recharge the battery.

As an option the potential use of mines specifically in the Arctic was given consideration. Because these waters are ice-covered most of the year, the only vessel capable of laying such mines is a nuclear-powered submarine. Two factors were paramount to this issue. The first was the desired kill probability which was placed at 90%. The second is where would the mines actually be placed. Three choke points in the north were identified as suitable for mining. With a 90% kill probability, it was calculated that 95,000 mines were required to cover those areas. The cost of these mines would be $5 billion Canadian just to put them down one time. In addition, there is no vessel capable of going into mine fields under the ice and taking a large mine field out of action as would be required by the 1907 Hague Convention. A final consideration is that once a mine field is in place, and once the field has been armed, it is indiscriminate as to whom it attacks. [Ref. 9: pp. 46-48]

In order to have capabilities match commitments in the peacetime and wartime missions of the Canadian Navy, the Canadian government has chosen to acquire nuclear-powered submarines Today nuclear propulsion technology is both mature and affordable. According to testimony heard before the Standing Committee on National defense in Canada's House of Commons, nuclear powered submarines are 1.7 time more expensive than their diesel counterparts but the SSN outperforms the diesel by a factor of three [Ref. 9: p. 44]. The SSN is capable of very high sustained speeds and can establish patrol operations in the furthest flung corners of the world's oceans with minimal delay. This speed and the ability to cover distance has tremendous impact on operational capability and utility. Other assets include stealth, invisibility, and

survivability; it is not oxygen dependent and rarely if ever needs to surface thus drastically reducing chances of detection. The length of any SSN's patrol is limited only by the amount of food the crew has carried onboard. Because, according to the White Paper, Canada intends to meet her responsibilities in the Atlantic, the Pacific, and the Arctic and to conduct regular, operational patrols in all three, the SSN becomes the only viable option. Only the nuclear-powered submarine is capable of sustained operations under the ice.

At present two boats are under consideration as Canada begins to fulfill the intentions of the White Paper. One is the Rubis-Amethyste- class SSN built by the French government's Direction des Constructions Navales. The other is the Trafalgar-class produced by the private enterprise Vickers Shipbuilding and Engineering Ltd. of Great Britian. The criteria for selecting the French or the British boat will be costs, capabilities, and the willingness of the foreign companies to participate with Canadian firms. [Ref. 10: p. B5] It is estimated that $7.5-8 Billion Canadian in 1986-87 dollars will be the money necessary to acquire from ten to twelve submarines and to put in place the infrastructure which will support them. That infrastructure would include training facilities and nuclear facilities as well as changes to existing naval bases at Halifax and Esquimalt necessary to accommodate the new boats. This amount is calculated based on 65% Canadian production over the life of the program [Ref. 9: p. 24]. It is intended that the first Canadian boat would be built in the country of origin with Canadian engineers and technicians on hand to watch and learn [Ref. 10: p. B5]. Roughly this breaks down to about $500 million per boat and $2-3 billion for the infrastructure. Table 2 compares some of the features of the Trafalgar and the Rubis-Amthyste. Regardless of which boat is chosen, certain modifications would have to be made in order to meet Canadian requirements.

The leading contender is the British Trafalgar which is considered superior to the smaller and less expensive French Rubis-Amethyste in terms of quietness and weapons capability [Ref. 11: p. 104]. The Trafalgar faces some obstacles that the Rubis-Amethyste does not, however. Under a 1958 agreement, the United States and Great Britain must agree together before either transfers nuclear technology to a third party. American approval is necessary because the Trafalgar's propulsion is based on U.S. innovations and technology. Under a 1959 U.S.-Canadian agreement, Congress has a veto over the transfer of U.S. technology with military applications to Canada. A major stumbling block was lifted when the U.S. defense and energy departments signed

an agreement on 27 October 1987 to allow Britain to supply Canada with this technical information [Ref. 12: p. 1]. This may have been the result of high level diplomatic maneuvers but the effort could pay off when the Canadian government announces its decision in June 1988. Another plus point for the Trafalgar is that it is compatible with the Mk. 48 torpedo. Not only is the Mk. 48 NATO interoperable but the Canadians have already purchased 48 of the U.S.-made torpedo. U.S. permission would be required to modify the Rubis-Amethyste for compatibility with the Mk. 48 but this could be done [Ref. 13: p. 88].

Table 2. RUBIS-AMETHYSTE AND TRAFALGAR SUBMARINES

	Rubis-Amethyste	Trafalgar
Displacement:		
Surfaced	2385 tons	4200 tons
Submerged	2670 tons	5208 tons
Dimensions:		
Length	72.1m	85.4m
Beam	7.6m	9.8m
Draught	6.4m	8.2m
Machinery:	2 turbo alternators; 1 electric motor	2 geared steam turbines
Reactor:	1 pressurized water cooled	1 pressurized water cooled
Speed:	25 knots	32 knots
Armament:	4x21 in (533mm) tubes	5x21 in (533) tubes
Complement:	66 officers & men	97 officers & men

[Ref. 14]

D. REACTION FROM THE UNITED STATES

The United States certainly has the technology and the production base to support the Canadian SSN program. Then why isn't there any American contender for this obviously lucrative contract? Money is at least part of the answer. A fully equipped U.S. Navy Los Angeles-class submarine now costs about $700 million, $200 million

more than what Canada intends to pay for each boat. Even lowering the costs by tailoring a Los Angeles hull to Canadian requirements might not make enough difference [Ref. 15: p. 22]. At one time it seemed possible that there would in fact be a late American entry into the competition. General Dynamics considered offering an updated Tullibee or Sturgeon class but the proposal never materialized. Another possible answer is that American corporations were as much surprised by the Canadian plan as the naval attache at the U.S. Embassy in Canada, believed the Pentagon was and simply did not have time to put together a credible proposal [Ref. 12: p. 35]. Given that taking advantage of emerging opportunities is something that the American business community is very, very good at, this reason for non-participation is not a strong one. A final potential explanation and perhaps the one most correct is that the absence of the American business community is a manifestation of Washington's reported disapproval of certain aspects of Canada's White Paper and associated security or defense policy.

Canada has chosen to give greater weight to her own national requirements and to steer a more independent course of action rather than completely subordinate herself to NATO. No one can fault this. What can be criticized is the negative effect this will have on some of her closest allies. Norway in particular will be hurt. Canada's reasons for abandoning her commitment to reinforce Norway in times of crisis may be completely valid. This is not what concerns the United States but rather the U.S. questions why more of the proposed 2% defense spending growth is not targeted for improvement in her conventional forces. The deficiencies which led Canada to her decision could be overcome but it would admittedly be expensive. No matter how sound Canada's rationale may be for this "shift" in commitment, the signal it sends to the Soviet Union is a matter of extremely grave concern not only to Norway but to the United States as well. The real dichotomy of Canada's plans to abandon her commitment to reinforce Norway as an economy measure is the intention, at the same time, to spend $8 billion on a new submarine fleet. It is reasonable to assume ,therefore, that the need for such a fleet was so powerfull, so overwhelming that it completely overshadowed Canada's other responsibilities. "During the summer of 1987, Canada's Minister of External Affairs Joe Clark declared publicly that the proposed new submarines would defeat all challenges to Canada's Arctic sovereignty and that the major challenge today came from the United States" [Ref. 4: p. 10]. Characterizing your closest neighbor and most powerful ally as a threat of any sort is hardly conducive to the type of warm, cooperative

relationship with that neighbor. An informal survey of press reports in both Canada and the US show an overwhelming amount of the public rhetoric concerning Canada's new SSN program focused on the sovereignty claims and the American "threat" to those claims. Is it any wonder the United States has responded with substantially less than enthusiastic support for Canada's proposed SSN fleet? It is most unfortunate that the well supported security arguments which support and, in many respects, justify Canada's decision to acquire SSNs have not been given more public attention.

III. A QUESTION OF SOVEREIGNTY

Reporter

There is more political will in Canada today to go to our North and make our presence felt. There is a feeling we should know what is happening on our borders.

Pentagon

What you're saying is you (Canada) want to do what's already being done. We (the US) already watch the Arctic and we're your best friends and allies. Excuse me for being blunt, but what is the real motivation? Ego?

Reporter

Partly--but isn't that what nationhood is all about? [Ref. 16: p. 19]

Even before the 1987 White Paper hit the streets, leaks of its contents to the press were filled with the proposed SSN fleet and the contribution such a fleet would make in enforcing Canada's sovereignty in the North. In reality the subject of sovereignty was addressed in only about five hundred words and there is no mention of SSNs within that section. The word "sovereignty" is used only three other times and always in association with "security". It isn't too difficult to figure out that this "sovereignty" is an important, emotionally ladened issue for the Canadian public, press, and government officials.

Between even the closest neighbors and the best of friends there can be strong differences of opinion which can, if not handled well, threaten to poison the relationship. For the United States and Canada, an issue which matches this description is the question of sovereignty over a group of waterways which link the Atlantic Ocean and the Arctic collectively known as the Northwest Passage. Canada considers the Northwest Passage to be under its exclusive control. Canada claims the right to determine how, when, and under what conditions a vessel can travel through this gateway between the Arctic Ocean and the Atlantic. The United States does not agree. The US argues that the Northwest Passage is an international strait through which vessels of any nation can move unannounced and unrestricted. Neither Canada nor the US is likely to have a change of heart on this matter. For the United States, freedom of the seas is a cherished tradition with direct ties to national security and economic health. Although her own national security concerns in the Arctic are real enough, for Canada, the question of sovereignty over the Northwest Passage is even more directly

related to national pride. It is important to remember this relationship to national pride when looking at the legal question of territorial waters vs high seas.

Sovereignty is the right and power to govern. Canada believes her claims of complete sovereignty over the waters of the Canadian Archipelago which includes the Northwest Passage to be supported by historic title and the doctrine of straight baselines:

A. BASELINES, TERRITORIAL SEAS, AND INTERNAL WATERS

The territorial sea is the belt of ocean adjacent to the land territory and the internal waters of a coastal state. Under international law, territorial seas extend seaward from "baselines". The fixing of these baselines is important because it determines how far seaward a coastal state may claim its territorial seas. The normal baseline for measuring the territorial sea is the low-water line along the coast. Under normal conditions, this would allow the baselines to follow the curvature of the coast. Internal waters extend landward from baselines; territorial seas extend seaward from baselines. Internal, or national, waters include rivers, most bays, some gulfs, lakes, and ports; territorial seas are seaward of these internal waters. Sovereignty extends to the air space above and the seabed and subsoil beneath these waters. But the extent of this sovereignty is different in internal waters and territorial seas. A state exercises *complete* sovereignty over its internal waters in the same way as over its land territory. The sovereignty over the territorial seas is subject to the right of innocent passage.

There are special cases where a nation may draw "straight" baselines as opposed to the "normal" baselines. Under international law, a state with fringing islands or a deeply indented coastline may draw straight baselines according to specific criteria. An oceanic archipelago may also draw straight baselines.

Until the present century, most coastal states traditionally adopted a three-mile limit defining the breadth of their territorial seas. In the seventeenth century, the content, purpose, and breadth of territorial seas had become clearly defined. A cannon shot carried about three miles and "the control from the land ends where the power of man's weapons ends" [Ref. 18: p. 72]. The three mile limit may have originated from the fact that, at sea level, line of sight from the shoreline is about three miles rather than the range of cannon shot. However, the tradition developed, the result was a three-mile limit to territorial seas which was practical and acceptable. During the last twenty years, however, this has changed. Following a trend of many countries developing since the early part of the century, in 1970, the Canadian government extended Canada's

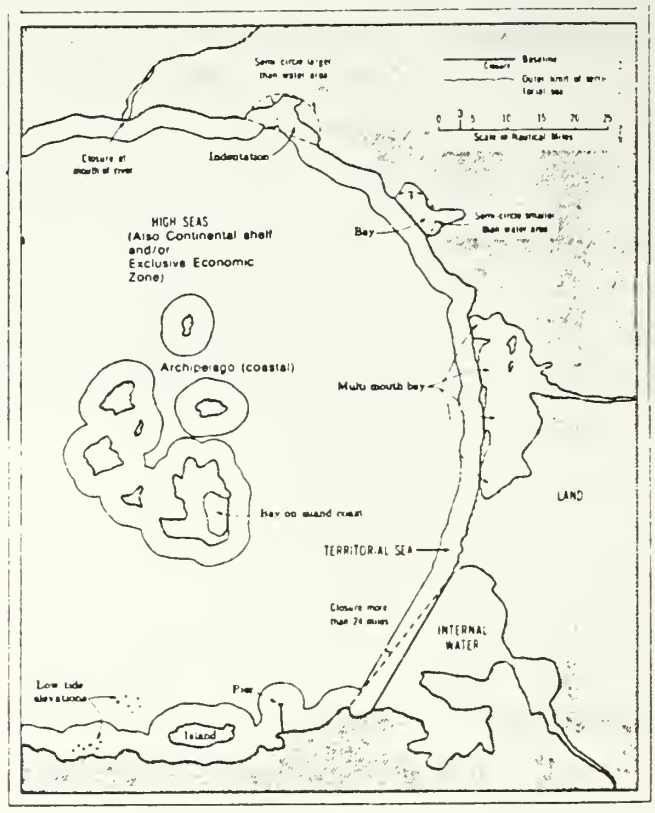

Figure 1. The Baseline (from which the territorial sea is measured) [Ref. 17: p. 37]

territorial sea breadth to twelve nautical miles (nm). Today customary international law permits a coastal state to establish a territorial sea of up to twelve nm in breadth. This extension of the territorial sea to twelve nautical miles would place many important international straits, which formally had high seas areas running through them, within the territorial sea of the coastal state. Included in this category is the Northwest Passage. The United States has not extended her territorial seas to twelve miles but has continued the three-mile limit adopted in 1793.

After passage of the 1970 law extending Canada's territorial sea to twelve miles, the government issued a statement which carefully omitted any distinction between territorial and internal waters saying "the effect of the new limit on the Northwest Passage was that, under any sensible view of the law, it is subject to complete Canadian sovereignty" [Ref. 16: p. 52]. Three years later the Canadian justice department became

very specific and declared that Canada claimed the waters of the Canadian Archipelago to be internal waters although this claim was not backed up by any treaty or legislation. Such a claim, however, is not presently recognized under international law.

B. INNOCENT PASSAGE AND TRANSIT PASSAGE

1. The Right of Innocent Passage

The Northwest Passage is considered to have as many as seven routes through the Canadian Archipelgo which provide ways to move between the Arctic and the Atlantic Oceans. With a twelve mile territorial sea each of routes contain at least one area of territorial sea. This has the effect of limiting the rights of non-Canadian vessels to the right of innocent passage through the Northwest Passage unless the Northwest Passage is considered a strait used for international navigation.

Not merely a privilege but a right, innocent passage is accepted in international law and was codified by the 1958 Convention on the Territorial Sea and the Contiguous Zone. This convention concluded that no "toll charge" could be assessed, innocent passage was to be unhampered, and dangers to navigation should be appropriately identified. It stated that "passage is innocent so long as it is not prejudicial to the peace, good order or security of the coastal State" [Ref. 19: p. 5]. Such passage does not include stopping or anchoring unless this is made necessary by some form of distress.

The 1958 Convention also held that it was not the character of the ship, but rather the character of the passage itself that was the determining factor. This means that commercial vessels *and warships* have the right of innocent passage through a strait as long as that passage is not a threat to the security of the costal state.

A coastal state has the power "to take necessary steps in its territorial sea to prevent passage which is not innocent". A coastal state has the right to temporarily suspended the innocent passage of foreign ships in the territorial sea if that is considered to be essential to the protection of its national security. Also, a coastal state has the right to expel a warship that refuses to comply with local regulations. [Ref. 19: p. 6]

It is the right of innocent passage which distinguishes the legal status of territorial seas from that of internal waters where a state's sovereignty is complete. The basic principles of this portion of the law of the sea are set down in the 1958 Convention and can be summarized as follows:

1. Innocent passage is a right, and not merely a privilege to be granted or refused at the discretion of the coastal state.

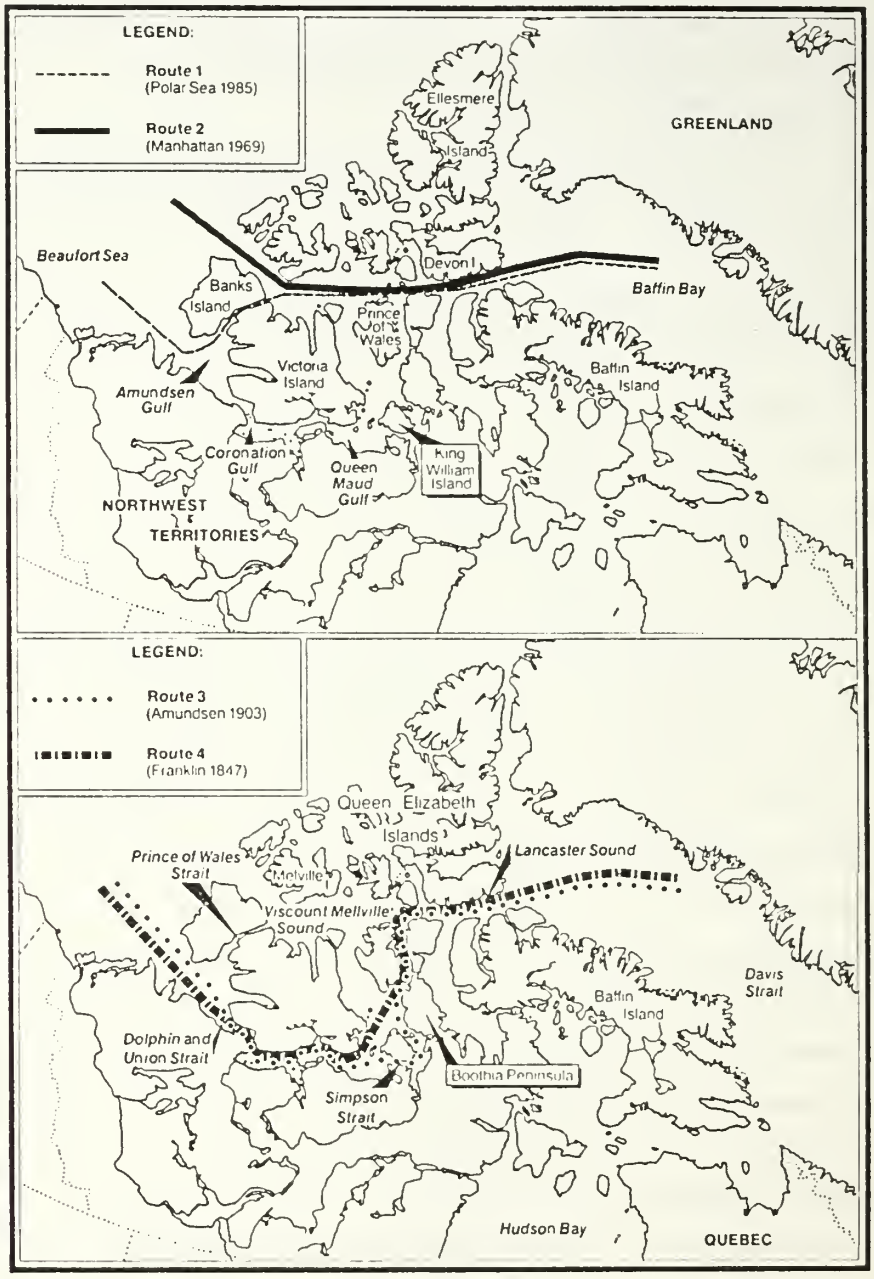

Figure 2. Routes 1, 2, 3, and 4 of the Northwest Passage [Ref. 16: p. 42]

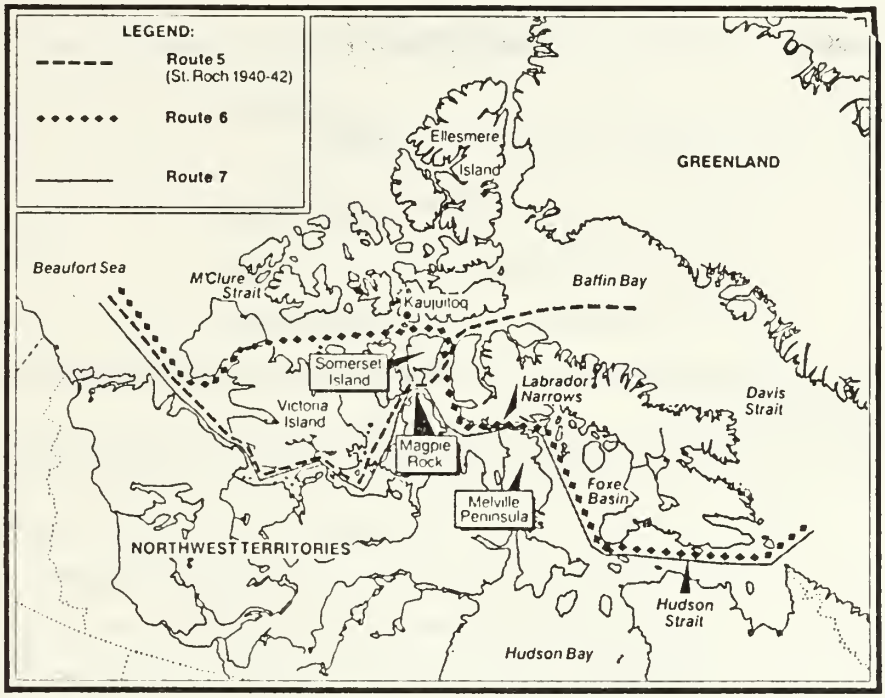

Figure 3. Routes 5, 6, and 7 of the Northwest Passage [Ref. 16: p. 45]

2. The innocence of the passage is generally determined by reference to the nature of the passage itself but, in the case of ships carrying polluting materials, it may be determined by its conformity with certain anti-pollution standards.

3. The right of innocent passage applies to both merchant ships and warships, although its application to the latter has been disputed by some. The passage of merchant ships may be suspended temporarily for security reasons, and warships may be expelled for refusal to comply with regulation of the coastal states. *Submarines must navigate on the surface and show their flag.*

4. The right of innocent passage exists in the following areas.

a. Internal waters newly-enclosed by straight baselines, if the newly-enclosed area was formerly territorial sea.

b. Territorial waters, either along the coast or in a strait.

c. Straits connecting two parts of the high seas or one part of the high seas and one part of territorial waters. If such straits are used for international navigation, there can be no suspension of the right of innocent passage. [Ref. 19: p. 19]

The 1982 Law of the Sea Convention defined innocent passage this way.

> Passage is innocent so long as it is not prejudicial to the peace, good order or security of the coastal State [Ref. 20: Art. 19].

Passage of a foreign ship is not innocent if the ship engages in any of the twelve activities specified by the 1982 Convention. These activities include:

1. any exercise or practice with weapons of any kind
2. any act aimed at collecting information to the prejudice of the defense of security of the coastal State
3. any act of willful and serious pollution contrary to international law.

The right of innocent passage applies not only to territorial seas and to newly-enclosed internal waters, it also applied to straits connecting two parts of the high seas, whether or not they are formed entirely of territorial waters. One determining consideration is the fact that a strait connects two parts of the high seas. A second important consideration is the fact that a strait is used for international navigation. These principles have been upheld in the International Court in the *Corfu Channel Case* [Ref. 19: p. 15-16]. These two points--that a strait connect two parts of the high seas and is used for international navigation--contributed to the conclusion that such passage should not be incorporated into the regime of innocent passage but should be considered separately.

2. Transit Passage

In addition to innocent passage, international law also today recognizes a new regime of passage through some straits used in international navigation that consist entirely of territorial sea. Transit passage is the exercise of freedom of navigation and overflight solely for the purpose of continuous and expeditious transit of a strait between two areas of the high seas or between two exclusive economic zones [Ref. 20: Art. 38].

The establishment of this new regime governing transit passage resulted from the demands of major maritime nations, the United States among them, which were not

willing to accept the extension of the width of the territorial sea out to twelve nautical miles without a guarantee of unobstructed passage through the more than one hundred straits affected by that extension. There are two major differences between innocent passage and transit passage. In transit passage, as opposed to innocent passage, aircraft may overfly straits and submarines are permitted to navigate submerged [Ref. 17: p. 107].

It is the position of the United States that the Northwest Passage is a strait used for international navigation to which the regime of transit passage applies. Canada, on the other hand, considers the Northwest Passage to be internal waters subject to her complete sovereignty and neither the right of innocent passage nor transit passage apply.

C. CANADA'S LEGAL POSITION

Canada's claim to sovereignty in the waters of the Canadian Arctic Archipelago and the Northwest Passage rests on two premises. One is that Canada has acquired sovereignty through the right to enclose internal waters within straight baselines and the other that sovereignty stems from historic title.

1. Straight Baselines for Coastal Archipelagos

Coastal archipelagos are defined as "those situated so close to a mainland that they may be reasonably considered part and parcel thereof, forming more or less and outer coastline from which it is natural to measure the marginal seas" [Ref. 19: p. 69]. Normally, baselines coincide with the low-water mark, and follow the curvature of the coast. There are, as already indicated, exceptions to this rule. International law as set out both in the 1958 Convention and the 1982 Law of the Sea Convention allows straight baselines "in localities where the coastline is deeply indented and cut into, or if there is a fringe of islands along the coast in its immediate vicinity" [Ref. 17: p. 51]. The 1958 Convention codifying customary international law provides seven criteria in the drawing of straight baselines.

1. Straight baselines may be used to join a fringe of islands along and in the immediate vicinity of the coast.
2. Straight baselines must not depart to any appreciable extent from the general direction of the coast.
3. The sea areas lying within the lines must be sufficiently closely linked to the land domain to be subject to the regime of internal waters.

4. Baselines shall not be drawn to and from low-tide elevations, unless lighthouses or similar installations which are permanently above sea level have been built on them.

5. The economic interests of a region may be considered in drawing particular baselines, providing such interests are clearly evidenced by long usage.

6. There is no maximum length for straight baselines except for bays. For bays, the closing line cannot be more than 24 miles long.

7. The waters enclosed by straight baselines are considered as internal waters, but the right of innocent passage continues to exist in water areas formerly considered as part of the territorial or of the high seas. [Ref. 19: pp. 79-80]

An oceanic archipelagic state may also use straight baselines, within certain limits to join the outermost points of the outermost islands and drying reefs of the archipelago [Ref. 20: Art. 47]. An archipelagic state is a state whose territory consists entirely of one or more archipelagoes; it may include other islands, but *may not possess any continental mainland* [Ref. 20 : Art. 46]. International law permits the use of straight baselines to enclose oceanic archipelago , but not archipelagoes adjacent to continental states. Nevertheless, in 1986, Canada's House of Commons made a declaration of straight baselines encompassing the Canadian Archipelago. This was the first concrete legislation to declare the waters inside the baselines to be *internal.* As internal waters, Canada claims complete sovereignty--without the right of innocent or transit passage. Canada's archipelago is neither an oceanic archipelago nor is it "a fringe of islands" and, therefore, lacks the legal basis under either of these regimes to be enclosed in straight baselines.

The US does not accept the use of straight baselines to delineate territorial waters except in very few areas that comply with international law such as Yugoslavia, Norway, and southern Chile [Ref. 19: p. 85].

2. Historic Title

Some commentators argue that Canada's sovereignty over its Arctic archipelagic waters has historic basis and that she has an established, historic title to these waters. Donat Pharad, a professor at the University of Ottawa and a respected authority on this issue, provided the following definition of historic bays which he believes could be applied to historic waters in general.

> The term 'historic bays' means those bays over which coastal State or States have effectively exercised sovereign rights continuously for a period of long standing, with explicit recognition of such practice by foreign states [Ref. 19: p. 106].

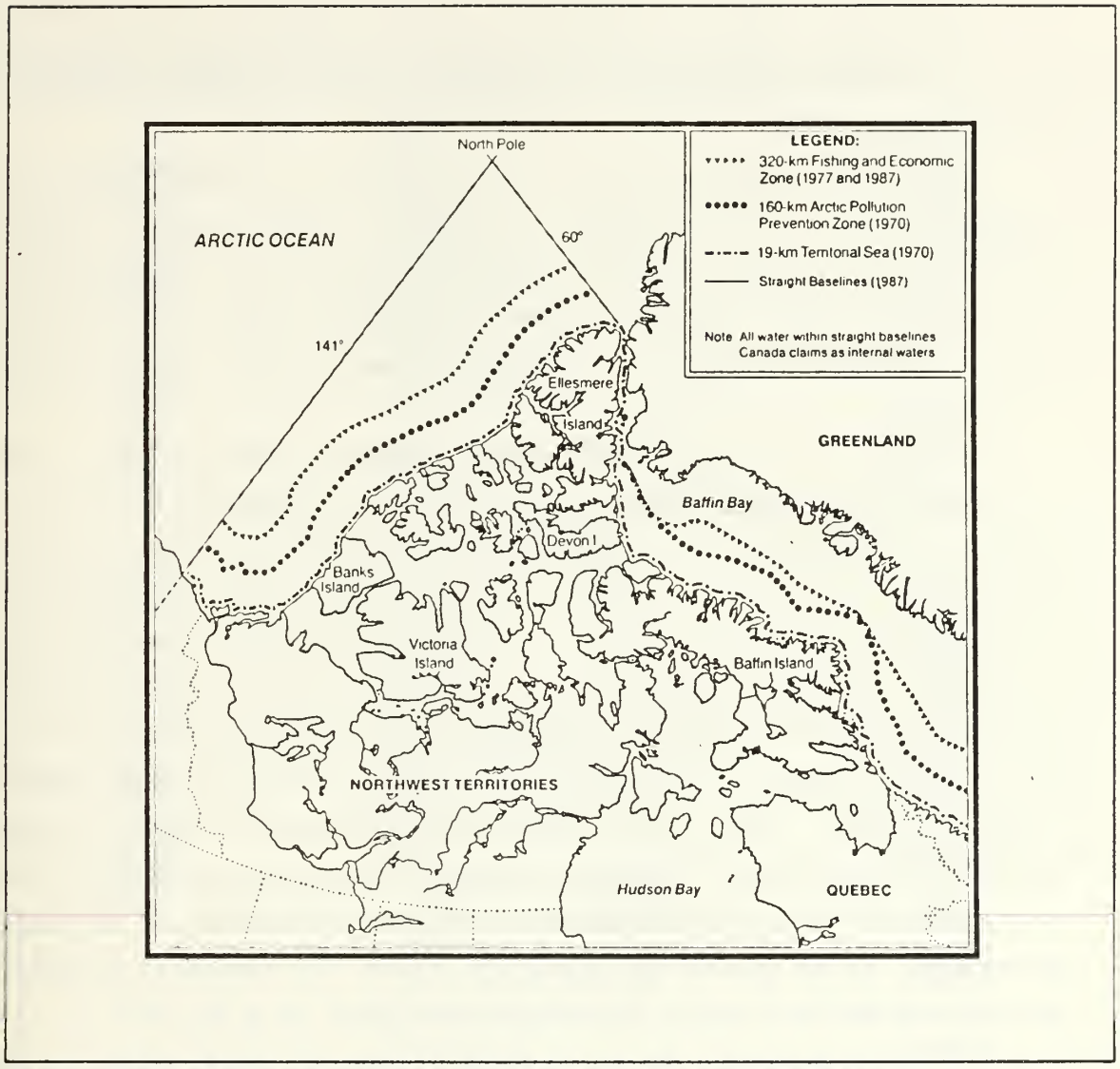

Figure 4. Formal Boundries Claimed by Canada [Ref. 16: p. 51]

While not based on established international law, there are three generally recognized requirements which must be met. The first is the exercise of authority by the coastal state, the second is that this must occur over a long period of time, and the third is the acquiescence by foreign states in this authority. It would appear that in the case of Canada's Arctic water none of these criteria can be met.

Following World War II, US ice breakers, sometimes with Canadian observers onboard, probed Canada's Arctic straits, sounds, and channels while carrying supplies to remote US-Canadian weather stations. The first ship to navigate McClure Strait was

USCGC *Westwind* in 1948. The USS *Edisto* and the *Westwind* were the first ships since Sir Edward Belcher's journey in 1852-54 to probe the Penny Strait. Later, the *Edisto* became the first ship to transit the Fury and Hecla Strait and circumnavigate Baffin Island. [Ref. 21: p. 67]

Since 1903, there have been about fifty known complete transits of the Northwest Passage. Table 3 on page 25 provides a list of these transits as compiled by the Canadian Coast Guard. Of these, over half were conducted by Canadian ships with the remainder foreign. One-quarter of the total number of transits were made by US ships. Two of these ships gained notoriety with the Canadian public--the *Manhattan* and the *Polar Sea.*

In 1969, the *Manhattan* which was owned by Humble Oil (now Exxon) demonstrated that icebreaking bulk carriers specifically designed for such service can operate year round between Alaska and the East Coast or between Japan and the North Sea [Ref. 21: p. 70]. Many in Canada saw the transit as a threat to Canadian Arctic sovereignty and were angry that the US had not sought permission from the Canadian government. What was not brought out in the press reports nor was it mentioned in some more recent writings [Ref. 16] is the fact that oil company representatives (it was not a mission of the US government) and the US Coast Guard consulted closely with Canadian officials. They sought advice and requested that a Canadian ice breaker accompany the *Manhattan.* Canada gave the voyage full approval and support. Captain T. C. Pullen, RCN, was onboard the *Manhattan* as a representative of the Canadian government. In his opinion, the *Manhattan's* master "was meticulous in matters of protocol, and flew the Canadian flag as appropriate" [Ref. 21: p. 71].

If looked at closely, the way in which *Manhattan's* transit of the Northwest Passage was handled by Humble Oil, actually supported Canada's sovereignty claim: permission to transit the Northwest Passage *was* requested and obtained. Still, this greatly angered the press and at least a portion of the Canadian public and was seen as a threat to Canada's sovereignty.

Sixteen years later, in 1985, USCGC *Polar Sea* transited from the Atlantic to the Pacific through the Northwest Passage. This was not a deliberate attack on Canadian sovereignty but rather, at least in US eyes, a sensible operational deployment--the *Polar Sea* is a powerful icebreaker and the chosen route was the shortest available by far. In US eyes this is an international waterway open to transit by all. The Canadian government was informed of the plan but permission was *not* requested.

Table 3. LIST OF FULL TRANSITS OF NORTHWEST PASSAGE

Year	*Ship*	*Flag*
1903-6	*Gjoa*	Norway
1940-2	*St Roch*	Canada
1944	*St Roch*	Canada
1954	*CCGS Labrador*	Canada
1957	*USCG Storis*	US
	USCG Bramble	US
1958	*USS Nautilus*	US
1960	*USS Seadragon*	US
1962	*USS Skate*	US
1967	*CCGS John MacDonald*	Canada
1969	*Manhattan*	US
	CCGS John MacDonald	Canada
	USCG Northwind	US
	USCG Staten Island	US
1970	*CSS Baffin*	Canada
	Hudson	Canada
1975	*Pandora*	Canada
	Theta	Canada
	CCGS Skidgate	Canada
	CCGS John MacDonald	Canada
1976	*CCGS J.E. Bernier*	Canada
	Canmar Explorer	Canada
1976-8	*J.E. Bernier II*	Canada
1977	*Willilaw*	Holland
1978	*CCGS Pierre Radisson*	Canada
	CCGS John MacDonald	Canada
	CCGS Louis St Laurent	Canada
	MV Canmar Kigoriak	Canada
1980	*CCGS J.E. Bernier*	Canada
	Pandora II	Canada
1981	*CSS Hudson*	Canada
	Mermaid	Japan
	Morgan Stanley	Canada
1983	*Arctic Shiko*	Canada
	Polar Circle	Canada
1984	*Linbad Explorer*	Sweden
1985	*USCG Polar Sea*	US
	Arctic Helios	Canada
	Arctic Mallik	Canada
	CCGS John Mac Donald	Canada
	World Discoverer	US
1986	*Kalvik*	Canada

[Ref. 16: pp. 227-228]

Since the USS *Nautilus* became the first submarine to reach the North Pole in 1958, there has been quite a bit of submarine traffic in the Arctic. Table 4 provides a list of announced Arctic submarines operations. It is not unreasonable to speculate there have been many others which were not announced. In 1987, two US SSNs were joined by a British *Trafalgar* for joint exercises in the Arctic. When the surfacing of a US submarine at the North Pole is made public or a joint Western submarine exercise in the Arctic is announced, the United States does not specify how the SSNs reached the North Pole other than to say that they traveled through international waters.

Table 4. ANNOUNCED ARCTIC SUBMARINE OPERATIONS

Date	*Submarine*	*North Pole*
August 1958	*Nautilus*	Yes
August 1958	*Skate*	Yes
March 1959	*Skate*	Yes
February 1960	*Sargo*	Yes
August 1960	*Seadragon*	Yes
June 1962	*Leninskiy Komsomolets*(Soviet)	Yes
July-August 1962	*Skate & Seadragon*	Yes
February 1967	*Queenfish*	No
March-April 1969	*Skate*	No
April 1969	*Whale & Pargo*	Yes
July-August 1970	*Queenfish*	Yes
November-December 1970	*Skate &Hammerhead*	Yes
February 1971	*Skate*	No
February-March 1971	*Trepang*	No
March 1971	*Dreadnought* (British)	Yes
March-April 1973	*Seadragon & Hawkbill*	No
March-May 1975	*Bluefish*	Yes
April-May 1976	*Gurnard*	Yes
September-October 1976	*Sovereign*(British)	Yes
March-April 1977	*Flying Fish*	Yes
October 1978	*Pintado*	Yes
April-May 1979	*Archerfish*	Yes
October 1981	*Silversides*	Yes
December 1982-January 1983	*Tautog & Aspro*	Yes
August 1983	*L. Mendel Rivers*	No

[Ref. 22: p. 122]

The waters of the Northwest Passage are ice-covered for much of the year. Canada does not possess, at present, the powerful icebreakers or the nuclear-powered submarines necessary to enforce her claims of sovereignty or to exercise authority over the Northwest Passage. Other maritime nations, including the United States and the Soviet Union, have the capability to transit this passage at will and do not consent to Canada's authority over these waters. In fact, both the United States and the Soviet Union hold that the Northwest Passage is an international waterway. Neither accept the claim that it be regarded as among Canada's internal waters.

D. STILL A DIFFERENCE OF OPINION

Canada's claim of complete sovereignty over the Northwest Passage is difficult to support. Her claim that this waterway is and always has been part of Canadian internal waters where even right of innocent passage does not exist is dubious and apparently without support under international law. The 1982 Law of the Sea Convention (which for unrelated reasons the US did not sign) is not in force. It did, however, codify customary international law permitting a coastal state to extend its territorial seas from three to twelve nautical miles. For Canada and the maritime nations interested in transiting the Northwest Passage the extension brought parts of the Northwest Passage under the definition of territorial sea. This does not strengthen Canada's claim of sovereignty or even restrict foreign ships to innocent passage, because of the new right of transit passage. International law does not support Canada's enclosure of her archipelago with straight baselines nor can her claim of sovereignty find any real support through historic title.

The United States continues to insist that the Northwest Passage is an international waterway. Captain T. C. Pullen, RCN, put it very well.

> But contrary to what some Canadians believe, the Northwest Passage is the sea route that links the Atlantic and the Pacific north of America. It does not originate in the east where Lancaster Sound meets Baffin Bay and terminate in Amundsen Gulf in the west; if it did, the passage would be exclusively Canadian. In fact, it is an ice-encumbered route stretching 2,850 nautical miles from Greenland's Cape Farewell to Bering Strait in Alaska. It has an international dimension. Mariners attempting to navigate the Northwest Passage must sail 1,200 nautical miles in the Canadian Arctic, but they also travel through 750 nautical miles of Alaskan waters, plus 900 nautical miles of waters in which Canada shares an interest with Denmark and Greenland. [Ref. 21: p. 70]

The strategic interests of the United States will not allow her to accept any agreements which would close off important waterways. Such compromises would set a dangerous precedent for the other choke points around the world which must be kept open and for the future US security role in the Arctic.

E. US-CANADIAN AGREEMENT JANUARY 1988

On 11 January 1988, in Ottawa, an agreement on Arctic cooperation was signed by the governments of Canada and the United States [Ref. 23]. The two most important points of this agreement which can be found in Appendix 2 are:

1. The Government of the United States pledges that all navigation by US icebreakers within waters claimed by Canada to be internal will be undertaken with the consent of the Government of Canada.
2. Nothing in this agreement of cooperative endeavor between Arctic neighbors and friends nor any practice there under affects the respective positions of the Governments of the United States and of Canada on the Law of the Sea in this or other maritime areas or their respective positions regarding third parties.

A third equally important part of this agreement is what is not said--submarines are not mentioned. Basically the United States and Canada have agreed to disagree. Both have bowed however slightly to the wishes and needs of the other. The US by promising to request permission for her icebreakers (surface ships) to enter waters claimed by Canada to be internal and Canada by not mentioning transits by US SSNs. If both governments will accept this document for exactly what it says, no more and no less, it could help soothe battered egos and security concerns on both sides of the border.

IV. CANADA'S THREE OCEANS AND THE SOVIET THREAT

So here we are--a great nation of continental dimension--required--by geography, history, economics, and security--to recognize our maritime status and against that background to consider the future of our maritime forces [Ref. 24].

Vice-Admiral C.M. Thomas
Commander Maritime Command
28 January 1988

As you are aware, two of the Soviet navy's assessed five basic missions are strategic offense, which involves the use of submarine-launched ballistic and sea-launched land attack cruise missiles and the protection of those launch vehicles or submarines, and secondly, the interdiction of sea lines of communication. [Ref. 9: p. 7]

Rear Admiral John Anderson
Chief, Submarine Acquisition Program
2 February 1988

Following years of neglect, the Canadian navy is preparing to meet the challenges of today and the foreseeable future. Canada is the world's second largest nation and has the world's longest coastline, some 250,000 km of it. If you include the waters of the Arctic archipelago add 6.3 million km of shoreline. Canada must be able to protect not only her economic interests but to meet her security requirements in the three oceans which border her shores--the Atlantic, the Pacific, and the Arctic. Each ocean is important in terms of Canadian defense and the defense of Canada's allies. The maritime forces on the East Coast consist of two destroyer squadrons each with six destroyers, a submarine squadron and seven maritime air squadrons. The destroyers, with embarked helicopters, operate in anti-submarine warfare (ASW) task groups which conduct surveillance operations, protect vital shipping and support other NATO maritime commitments. On Canada's west coast are two destroyer squadrons each with four destroyers, only two maritime air squadrons, and no submarines at all. These units conduct surveillance operations and support joint Canadian-US security operations. Canadian naval planners are proceeding with a plan for three task groups, one based in the Pacific and the others on the East Coast. The primary mission of these task groups--tactical ASW [Ref. 25: p. 87].

A. THE ARCTIC'S STRATEGIC IMPORTANCE

It is *not possible* to discuss Canada's intentions to acquire SSNs without a great deal of attention being focused on the Arctic Ocean. Leaving the sovereignty issue aside for the moment, there are very good reasons of national security which would drive the same decision. On one level it is all too easy to ignore the Arctic if for no other reason that the fact that it appears as an uneven, white band at the top of most maps. Seen from a different perspective, the top of the world is obviously an area of strategic importance which cannot be ignored. *The shortest routes between the population and industrial centers of the United States and the Soviet Union run over the Arctic.* For Canada, lying between the two super powers, an increase in her involvement in the defense of North America within the Arctic waters is a wise move.

1. The Arctic Mediterranean

For the sake of a working definition, "the Arctic" is composed of the Arctic basin, which includes the Arctic Ocean and the "circumpolar seas"--the Barents, Kara, Laptev, East Siberian and Chukchi Seas; its littoral, comprising northern Alaska and Canada, all of Greenland, northern Norway and the Svalbard archipelago, and the northern shores of the Soviet Union with its associated islands; and its approaches--the Bering Strait, the Greenland and Norwegian Seas, and Iceland [Ref. 26: p. 1]. While this definition may appear too generous to some, the Soviet Ministry of Defense extends the boundaries of the Arctic TVD (theater of military operations) even farther. The Arctic TVD includes not only the central Arctic Basin but also the Norwegian and Greenland Seas, Baffin Bay, and even Hudson Bay [Ref. 27: p. 4].

The Arctic Ocean occupies about 14 million square kilometers, a portion of which is topped by a permanent polar ice-cap. The thickness of this ice varies from one to twenty meters but some ice islands may be 60 meters thick. Of critical importance to missile-firing submarines are the *polynyas* (a Russian name) or area of open water which account for 5-8% of the ocean surface in winter and as much as 15% in the summer. There are few permanent features of this ice mass but the annual limits of old and new ice are known. The ice conditions for any particular time or place are not possible to predict although there are some recurring polynyas in parts of the Canadian Arcipelago and off the west coast of Greenland. The entire mass of sea-ice is constantly in motion drifting clockwise and making a complete circuit every two to four years. The water beneath this moving ice can be as deep as 5000 meters. The deepest waters are on the North American side where the continental shelf is narrowest. On the Soviet side the

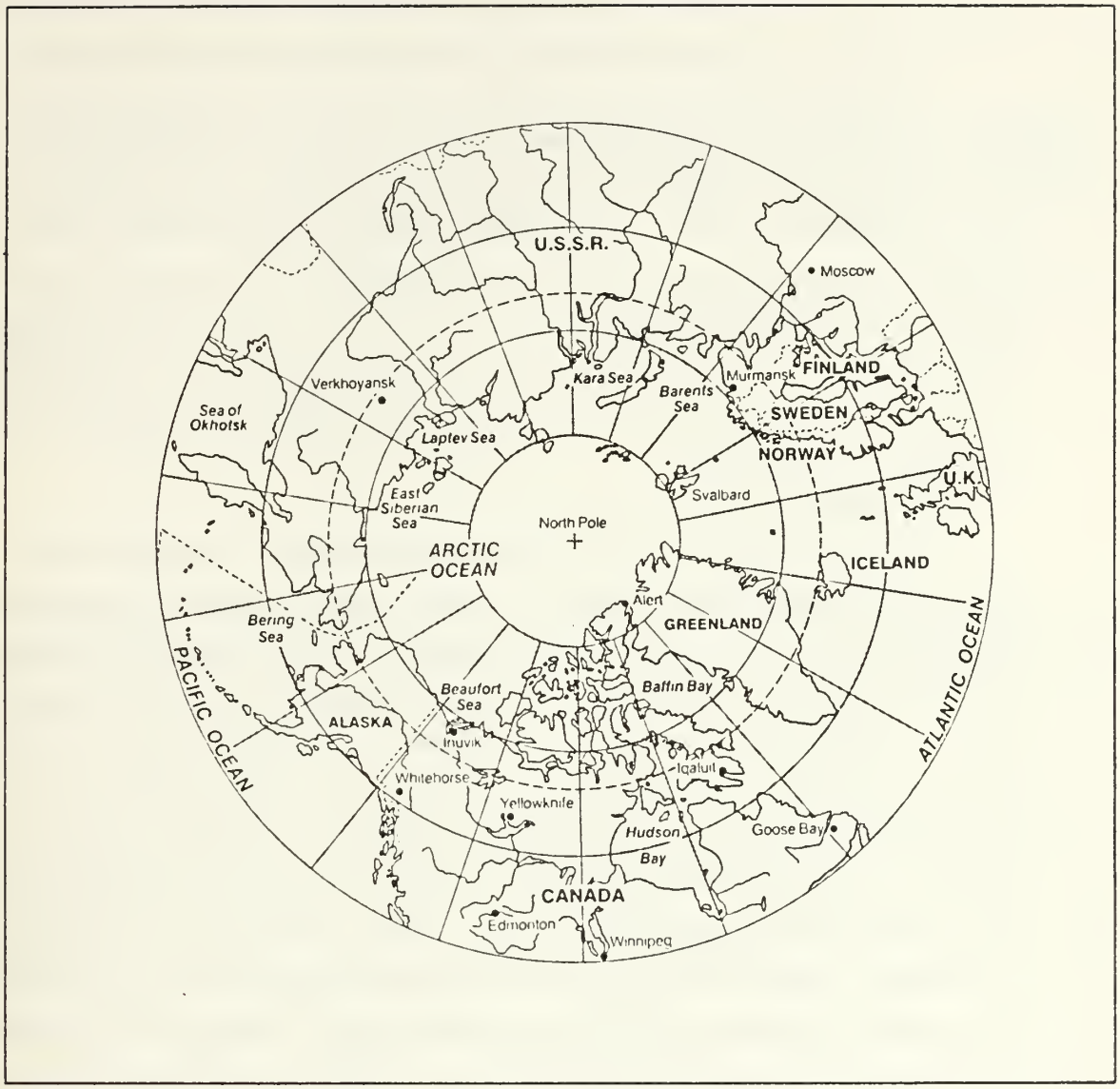

Figure 5. A View From the North Pole [Ref. 16: p. 10]

continental shelf is very wide, as much as 1500 kilometers wide, forming the relatively shallow circumpolar seas.

The Arctic is shared roughly equally between the Soviet Union and five other nations--Norway, Iceland, Greenland (a part of the kingdom of Denmark), the United States, and Canada. All five of these nations are members of NATO. Four--Norway, Greenland the US, and Canada--share the shores of this mediterranean while the fifth, Iceland, guards the major outlet of the Arctic to the Atlantic. The only other exits are through the narrow Bering Strait between the Soviet Union and the US, or through the

Canadian Archipelago. These waterways are of critical importance if moving from the Arctic Ocean into the North Atlantic or if moving from the Pacific to the Atlantic.

Advances in technology have raised both the military and the economic utility of the Arctic. Once a massive, impenetrable barrier, the Arctic has become the site of growing competion between the Soviet Union and the West. The Arctic is now seen as an area of potentially immense wealth, holding perhaps as much as 50% of the world's oil reserves plus natural gas, coal, and strategic minerals. In the military arena, two weapons platforms developed since the close of World War II have opened this formerly closed environment. One is the long-range strategic bomber capable of utilizing the air ways over the pole and the other is the nuclear-powered submarine capable of utilizing the waterways under the pole.

2. The Soviet Threat

On the Kola Peninsula some 300 kilometers inside the Arctic Circle is the homeport of the Soviet Union's powerful Northern Fleet. This location was chosen not because it is within the 67 degrees north latitude but for its comparatively unrestricted access to the open sea. The Kola Peninsula enjoys continuous access to the Atlantic and, as the western end of the Northern Sea Route, it has seasonal access to the Pacific Ocean as well. Even so, in order to gain the waters of the Atlantic, the Soviets must first travel through the relatively shallow waters off Norway and the potential barrier of the GIUK gap. The Soviets have unrestricted access to only one deep water area--the Arctic Ocean. It is here at Severomorsk and Polyarny, north of Murmansk, that the other half of the Soviet's general purpose submarine fleet and some 60% of the Soviet ballistic missile nuclear submarine (SSBN) fleet are homeported. A major wartime priority for the Soviets will most certainly be protecting those SSBNs and the guaranteed second strike; however, a secondary mission for Soviet SSNs will almost as certainly be interdiction of NATO SLOCs and the flow of supplies from North America to Europe.

The Soviets view the Arctic TVD as an enclosed theater. It is possible to enter or to leave this theater only through a small number of relatively narrow passages. Controlling these choke points will play a central part of any Soviet effort to gain control of the Arctic. These choke points are natural defensive positions and the key to the ability of the Soviet submarine force to exploit the Arctic TVD's central location in the Northern Hemisphere. Soviet military theorists have said that "control of straits and strait zones enables naval forces to maneuver rapidly between theaters, and to interdict the movement of (enemy) ships to other areas of a sea or ocean TVD." World War II

is filled with examples illustrating the validity of this statement. In the future, the role of choke points in maritime strategy will grow in importance.

> Since warfare of the future. . .may take on a global scope, various types of naval forces will need to maneuver between ocean theaters of military action. The role of straits such as the *Bering Strait*, the Drake Passage, *the straits of the Canadian Archipelago*, and others--which have almost never before been utilized in maritime warfare--will then be considerably enhanced.

Through the Canadian Archipelago four narrow passages control all inter-theater movements:

1. the Robeson Channel (18 NM wide)
2. the Lancaster Sound (38 NM wide)
3. the Fury and Hecla Strait (7 NM wide)
4. the Cardigan Strait (6 NM wide)

The Robeson Channel and Lancaster Sound are between 200 and 500 meters deep while the Fury and Hecla Strait and the Cardigan Strait are less than 200. The need to control choke points such as these is as important to NATO and the West as it is to the Soviet Union. [Ref. 27: pp. 7-9]

The importance of the Arctic as a defensive bastion for Soviet strategic (SSBN) submarines is widely accepted. Soviet SSBNs now deploy into the Barents Sea and the Arctic Ocean on a routine basis. Today, longer-range missiles would enable those submarines to reach targets throughout most of continental North America without having to leave the heavily guarded waters near the Soviet Union. It is believed that in the event of hostilities, the Soviets will keep the majority of their naval assets in these heavily defended homewaters. This would provide not only a defense in depth for the SSBNs and their guaranteed second strike but also provide a front line defense against possible invasion of the Soviet homeland. The result of this "bastion" notion may be that NATO must venture into Soviet dominated waters in order to challenge these naval assets which contribute to Soviet ablility to continue war-fighting. Challenging this war-fighting capability is made even more difficult once those strategic submarines slip beneath the Arctic ice giving the Soviets a formidable hidden nuclear reserve. Once beneath that protecting ice shield, the SSBNs could transit over the pole to the deeper waters off the North American continent. These submarines are relatively safe from the anti-submarine warfare efforts by surface or airborne assets, instead, the only ASW platform which can threaten them is an SSN.

It may well be that Soviet SSBNs will never leave their bastions and under the cover of ice approach the North American continent through the Canadian Archipelago. It's enough to realize that they could do so. The case for cruise missile shooters is somewhat different. The Soviets have the weapons platforms, the weapons, and the capability to utilize good firing positions in the Arctic--*including the Canadian Archipelago*--this is sufficient to warrant real concern. Not only are coastal targets of the North American homelands at risk but as the result of technological advances affecting range and accuracy plus simply being able to get closer, other military and industrial potential targets are also put at risk.

In addition to being within range of the target, a firing submarine must have enough open water to launch. It is believed that the Soviets would require water that is less than 50% covered by ice. According to Commander Peter T. Haydon, Canadian Forces, there are only two realistic firing positions for a short range cruise missile and three for the longer range weapons:

1. Amundsen Gulf
2. Gulf of Boothia
3. Davis Strait and Labrador Sea
4. approaches to Hudson Bay
5. Hudson Strait

Of these five locations, only one, the Davis Strait and Labrador Sea, is useful year round. Appendix I provides a list of the nine areas considered and a map identifying each. From a launch point in these areas, there is no shortage of secondary strike targets in the more heavily populated parts of Canada and the north-eastern US for the longer range SLCMs. [Ref. 27: p.16]

The threat from Soviet launched cruise missiles against targets in the north is only one of the implications of Soviet control of the Arctic TVD for offensive employment of the Soviet Navy's general purpose submarines. Another which is of concern is the employment of those submarines in *adjacent oceans*--the Atlantic and the Pacific. As the map in Figure [Ref. 2: p. 57] shows, the Arctic can be used be Soviet submarines to enter both the North Pacific and the North Atlantic where they would threaten NATO convoys as well as commerce in the Asia-Pacific region.

3. ASW Operations in the Arctic

As already indicated, there are several uses for the waters of the Arctic by hostile submarines. One is to transit into the Pacific or the Atlantic. Another would be to

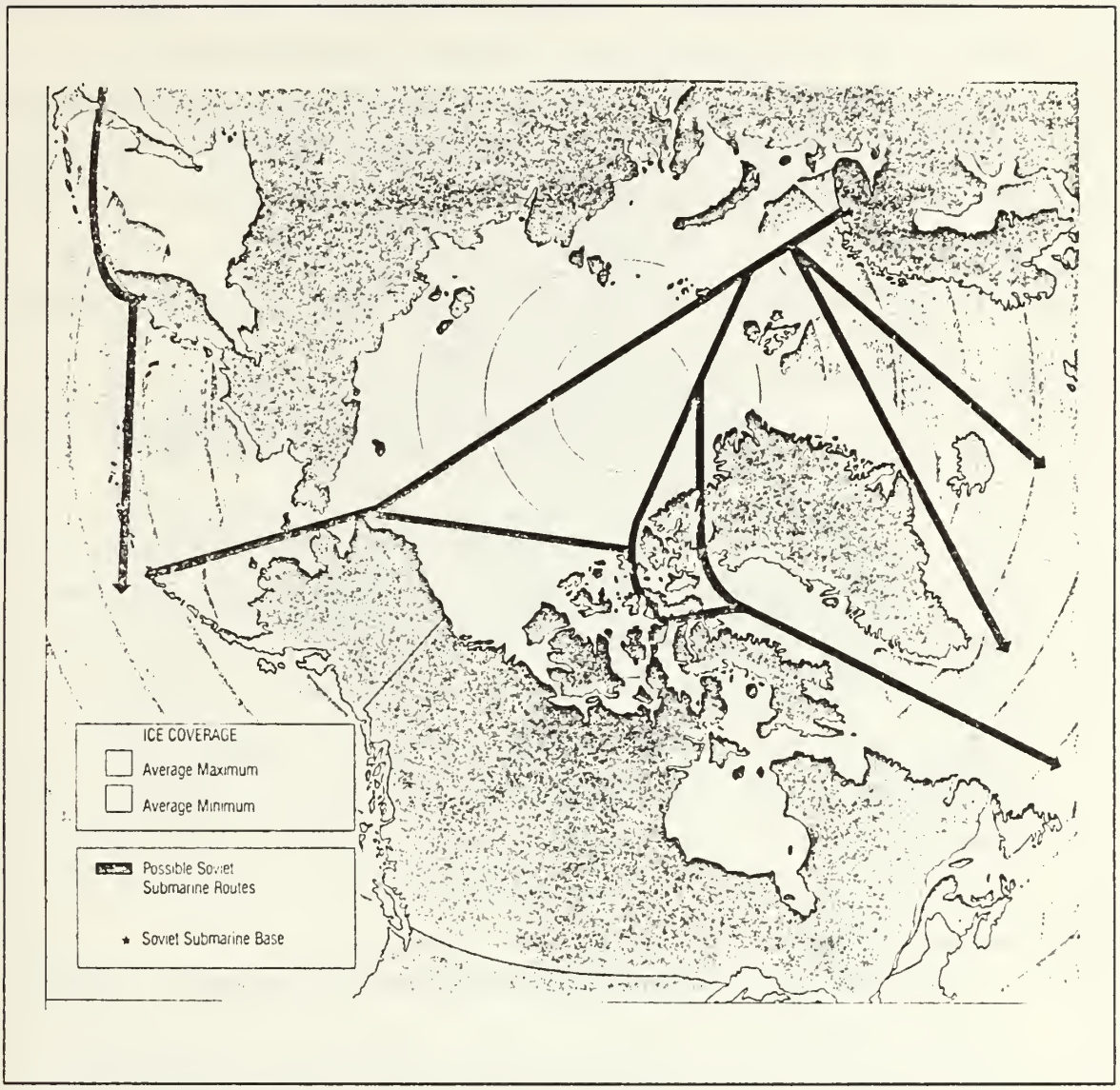

Figure 6. Possible Soviet Submarine Routes [Ref. 2: p. 57]

launch cruise missiles. And a third reason for Soviet SSNs (or Canadian or American SSNs) to be in the Arctic is to conduct surveillance or ASW--anti-submarine warefare.

The ice would be too great a threat to the thin-hulled ASW frigates and destroyers; even if an ice-breaker were fitted with ASW equipment, the ice would still damage sonar domes and towed sensors (variable depth sonar and towed arrays). Aircraft cannot drop sensors or depth charges through the ice. Submarines can go under the ice but conventional submarines can do so only for periods of time too short to be

terribly useful. One simple conclusion is unavoidable, the only platform capable of operating in the ice-covered Arctic is a nuclear powered submarine.

Although hydrographic surveys of the Arctic are far from complete, there are only a limited number of channels through which submarines can move into or out of the Arctic. Within the Canadian Archipelago only three are believed to have sufficient water depth:

1. The Northwest Passage, from Lancaster Sound through Barrow and McClure Straits
2. Smith Sound to Nares Strait
3. Jones Sound through Cardigan Strait and the channels through the Sverdrup Islands. [Ref. 28: p. 14]

There are also several large bodies of water deep enough for submarines to operate safely. When transiting under the ice, active echo sounders are necessary to give warning of ice keels and uncharted sea mounts (pingos). Other than the aid of these navigational sonar systems, the submarines must rely on the use of Very Low Frequency (VLF) signals, which can be received under the ice, satellite navigation fixes, and "landmarks" prepositioned on the sea bed [Ref. 26: p. 4]. Taking into consideration the channels deep enough to accommodate submarines transiting the Arctic and areas which provide good firing positions for cruise missiles, the most likely locations for patrol areas are easily identified.

In the Arctic, Canada intends to enhance its ASW effort by using fixed acoustic sensors. Although such sensors have certain limitations they are essential to maintaining realistic ASW surveillance and defense. The proposed fixed sensors will provide advance warning of intrusions and the proposed SSNs are necessary to localize, identify, and to intercept the intruding submarines.

The anti-submarine war in the Arctic will require the combined capabilities of air, surface, and subsurface platforms. Passive, fixed sensors working with sensors, both active and passive, onboard ships, planes, and submarines will be needed to localize and identify contacts. In open ocean such contacts can be intercepted and prosecuted by any of the weapons platforms. Under the ice is another story and in ice-covered Arctic waters only a nuclear powered submarine can perform the tasks of intercepting and prosecuting hostile submarines.

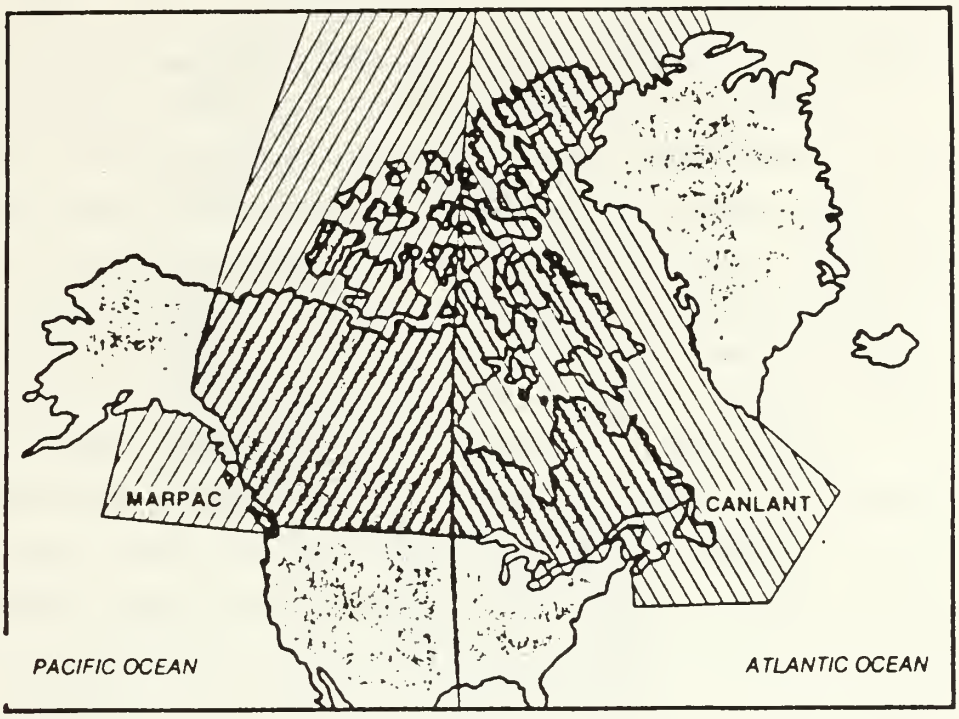

Figure 7. Maritime Command Areas of Responsibility [Ref. 25 : p. 87].

B. INCREASING EMPHASIS ON THE PACIFIC

The Pacific, the largest geostrategic area in the world, is becoming increasingly important to Canada. Ottawa has not had a consciousness as a Pacific nation; however,

> the 1987 defense policy White Paper recognizing as it does the strategic importance of events in the Pacific to Canada marks a major step along the path of acclimatizing Canadian policy-making to the demands and rigours of serious participation in the Pacific Rim security community [Ref. 29: p. 2].

In 1982, for the first time, Canadian trade with the countries of Asia and the Pacific surpassed her trans-Atlantic trade. In June 1984, the Secretary of State for External Affairs stated that during the past twenty years two way trade with the Asia-Pacific region has multiplied six times and Canadian exports have increased faster to that region

than to any other area of the globe. Japan has been Canada's second largest trading partner (after the US) since 1973. The Strait of Juan de Fuca which gives access to Vancouver, Seattle and Puget Sound, is one of the world's busiest waterways. In 1985, the port of Vancouver handled over 51 million tons of cargo. This is more that the combined total of Halifax, Toronto, Montreal, and Quebec. [Ref. 25: pp. 79-80]

The security of this impressive amount of economic interchange is by no means assured. Canada has a military responsibility for Juan de Fuca in cooperation with the US and for an area of the North Pacific that runs from the 49th parallel to the 165th meridian. This great ocean area is roughly bounded by a line half way to the Aleutians and the 49th parallel, including the Gulf of Alaska as well as Canada's own west coast. Under the Canada-United States Basic Security Plan (CANUS), defense of her eastern Pacific interests is shared between Canada's Maritime Forces Pacific (MARPAC) and the US Third Fleet. In wartime their responsibility would include defense of reinforcement, resupply and shipping to Alaska and the western Pacific as well as exports to Western Europe from Vancouver via the Panama Canal. Canada's SSNs would surely contribute to a credible defense of the sea lines of communication (SLOC) between Asia and Canada and Asia and the US. With SSNs homeported on her west coast, Canada would have the options of participating in operations in the Arctic or transiting through the Northwest Passage to assist in the Atlantic in support of NATO as well as conducting missions in the Pacific.

In all of Canada's three ocean areas of the Pacific, the Atlantic, and the Arctic, the primary threat to her territory and approaches comes from Soviet military capabilities, specifically the Soviet maritime capabilities. The build-up of the Soviet Pacific Fleet in the past ten years from a predominately coastal defense force to a powerful "blue-water" navy, the largest and most powerful of the four Soviet fleets, has raised well founded concern. Canada is and will continue to be sheltered under the umbrella of US nuclear deterrence having no desire to acquire strategic nuclear weapons of her own. With this in mind, the approaches to the Trident submarine base at Bangor, Washington, requires conscientious protection. Some consider this base to be second only to the Soviet bases on the Kola Peninsula in strategic importance.

The Trident base at Bangor has attracted the interest of Soviet intelligence in the form of routine patrols by Soviet intelligence collectors with in the Strait of Juan de Fuca. Patrolling Soviet submarines are also believed to probe this focal area. The purpose behind these activities is open to speculation. It is possible that the goal is to

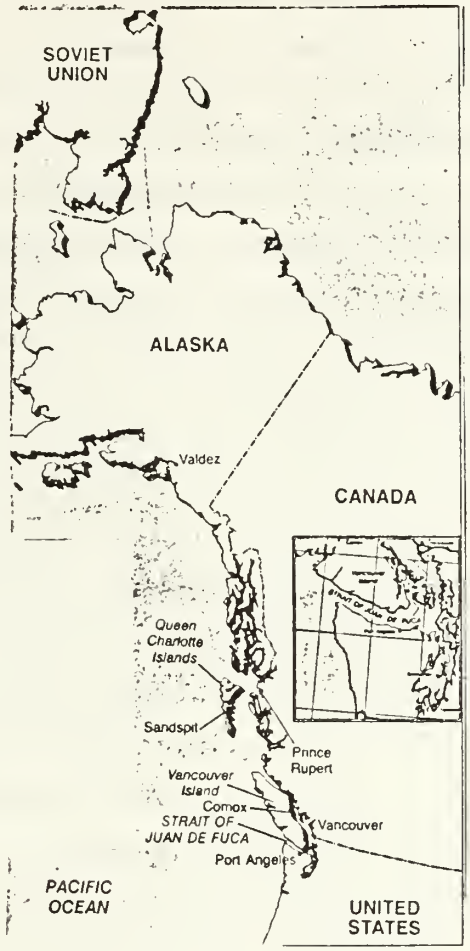

Figure 8. Strait of Juan de Fuca [Ref. 30: p. 149]

leave acoustic detection devices on the bottom of the strait in order to localize or mark Trident submarines as they transit to and from home port. Others believe the Soviets may wish to tap into and monitor undersea cable communicaton between North American and Australia. These cables may carry data from early warning satellites down-linked to facilities in Australia [Ref. 29: p. 13].

Current vulnerability will be reduced by the stationing of the NIMITZ carrier battle group in Everett WA on Puget Sound planned for 1989. Until then, the NIMITZ will operate out of Bremerton further south. Even with the arrival of the NIMITZ, which

should be seen as an American response to the growing Soviet submarine threat to North America's west coast. Canadian capabilities to counter the growing threat must also increase unless one is willing allow American naval forces to patrol Canadian waters because MARPAC lacks the ASW assets to exercise effective sea control in the Strait of Juan de Fuca. Up to now Canada has committed no dedicated resources to undersea surveillance in this area aside from a few ASW aircraft based at Comox on Vancouver Island. The transfer of a destroyer from the Atlantic to the Pacific fleet gives Canada exactly one destroyer in the Pacific which is capable of working with naval helicopters.

Aside from monitoring the comings and goings of American SSBNs and maybe listening in on potentially sensitive communication, the Soviet threat is also a more direct one in the form of the submarine launched cruise missile (SLCM). Cruise missiles have been in existence for a long time. The Soviets have been developing and deploying various types of cruise missiles since the late 1950s. However, advances in weapons technology have made cruise missiles, nuclear and non-nuclear, a matter of increasing concern. Ten years ago cruise missiles were relatively short-range and considered an anti-surface, anti-shipping weapon. Today, the longer-range SLCMs and the air launched variety (ALCM) can be targeted for objectives on land. While it is assumed the main mission of the SLCM will be as a second strike weapon, there may be a tactical role as well. Very recently, the long-range SS-N-21 SLCM became operational.

The SS-N-21 is believed to be the counterpart of the US Tomahawk. It has a range of 3000 km (1600 NM) and can be launched from most modern Soviet SSNs from a standard 533 mm topedo tube. It may be carried on the new Soviet Mike class attack submarine and the new Sierra class SSN as well as existing Victor III and Akula SSNs. It is believed that today the Soviet Union has only about two dozen of these missiles. According to recent estimates, though, by 1995, the Soviets could deploy as many as 1500. Also of interest and concern is the SS-NX-24 a large SLCM that has been linked with modified Yankee SSBNs. It is reported to have a range of 1600 km and is expected to be operational in the next few years. According to Vice-Admiral Thomas, Commander Maritime Command, "it is necessary to credit every Soviet submarine with being a cruise missile firer. . .they have converted the first of the Yankeee class, which was de-missiled as a result of the missile treaties, and have now equipped it with cruise missiles and sent it back to sea because they are not covered by the treaties" [Ref. 9: p. 25].

SLCMs have a terrain matching flight profile which make them immune from detection by existing ground based radar except at the time of launch. For this reason, each missile would have to be treated as an individual, low flying target. SLCMs are fairly slow, flying at less than Mach 1. At that speed and if fired near their extreme operational range, the SS-N-21 would take two to three hours to reach its target. Multiple launches would be needed in order to saturate North American defense systems and achieve a satisfactory kill probability.

The increasing ability of Soviet submarines to quietly approach the North American coastline at bases, airfields, ports, and command and control sites both reduces the time of flight and warning time and brings more strategic targets and industrial centers within range. Even NORAD headquarters in Colorado are at risk. This makes the task of detecting, localizing, and, if necessary, prosecuting the launch platform, the submarine, enormously important. Canada's need to increase her anti-submarine warfare (ASW) capabilities is pretty obvious. Canada must maintain unrestricted access to the seas and, with the US, protect shipping and the sea lines of communications within the Pacific. Nuclear powered submarines will be a valuable asset not only for ASW missions but, in more general terms, will also contribute to deterrence, defense of the Canadian homeland, and alliance commitments.

C. NATO AND THE ATLANTIC

Since World War II, Canada has placed the highest priority upon NATO and her Atlantic fleet. While it does not rule out fighting in other theaters, the White Paper has made it emphatically clear that Canada's security continues to be intimately involved with the security of Western Europe and NATO. For this reason, Canada's commitment to and focus on the Atlantic will continue to be paramount. In other than peacetime, Canada would by NATO agreement, place her submarines under the operational command of the Supreme Allied Commander Atlantic (SACLANT). SACLANT's ASW escort forces is of direct concern to the Commander Maritime Command (MARCOM) in Halifax who, as COMCANLANT, is a Principle Subordinate Commander (PSC) to SACLANT. COMCANLANT is responsible for the Canadian Atlantic Sub-Area to CINCWESTLANT. Since 1979, a Canadian Rear-Admiral has served as Deputy Chief of Staff to SACLANT. In 1986, a Canadian Commodore position as Chief of Staff to CINCWESTLANT was established and manned. Canadian participation at these high levels with the joint commands is ample evidence of Canada's determination to support NATO's maritime strategy. In peace time, NATO's maritime strategy calls for visible

and credible deterrent forces capable of maintaining an effective level of surveillance. This would enable NATO to monitor changes of build-ups in Soviet naval deployment patterns and demonstrate the ability to exercise sea control over vital sea lines of communication (SLOC).

In times of crisis and should a conventional war extend even a month, NATO and Western Europe would be entirely dependent on those SLOCs for resupply. It is estimated that in war NATO would require 1800 trans-Atlantic convoys in the first month alone--most passing through Canada's NATO zone [Ref. 16: p. 157]. The ability to control the geographic water space through which the convoys to Europe must pass and to deny the use of that same water space to the adversary is the main responsibility of Canadian maritime forces in support of NATO and adds credibility to the flexible response strategy outlined in the US maritime strategy. For NATO to fight beyond its inplace munition, these SLOCs, particularly in the North Atlantic, must remain open--free from Soviet interdiction. Defense of convoys is a traditional role for Canada and not just in the continental approaches to Canada but for the entire trans-Atlantic passage. Traditionally, this was the mission of frigates which must stay in fairly close to that convoy they are shepherding. The acquisition of SSN's by the Canadian navy does not mean that the frigates will be out of a job or no longer necessary. Instead, the combined efforts of the surface and sub-surface assets will mean that the Canadian navy can provide better, more effective defense of those convoys which will be vital to NATO's survival and eventual success. It is not surface units which pose the greatest threat to such convoys but rather is a sub-surface one--Soviet submarines.

According to Adm. Crickard, the greatest need in the western Atlantic is for ASW escorts [Ref. 32: p. 15]. In this role, the SSNs can be well employed. The US maritime strategy calls for aggressive, advance operations which would carry the fight into our adversary's backyard rather than allow him to chose the time and place of confrontation. Canada has as little enthusiasm as the US for a maritime battle waged off North America's east or west coast. Even the ability to conduct operations in Soviet homewaters alone without any declaratory policy to back it up is an important political statement.

Soviet submarine bases on the Kola Peninsula are homeport to about half of the Soviet's general purpose submarine force. (The Soviets have about 300 general purpose submarines compared with the US which has roughly 100.) In order to enter the SLOCs

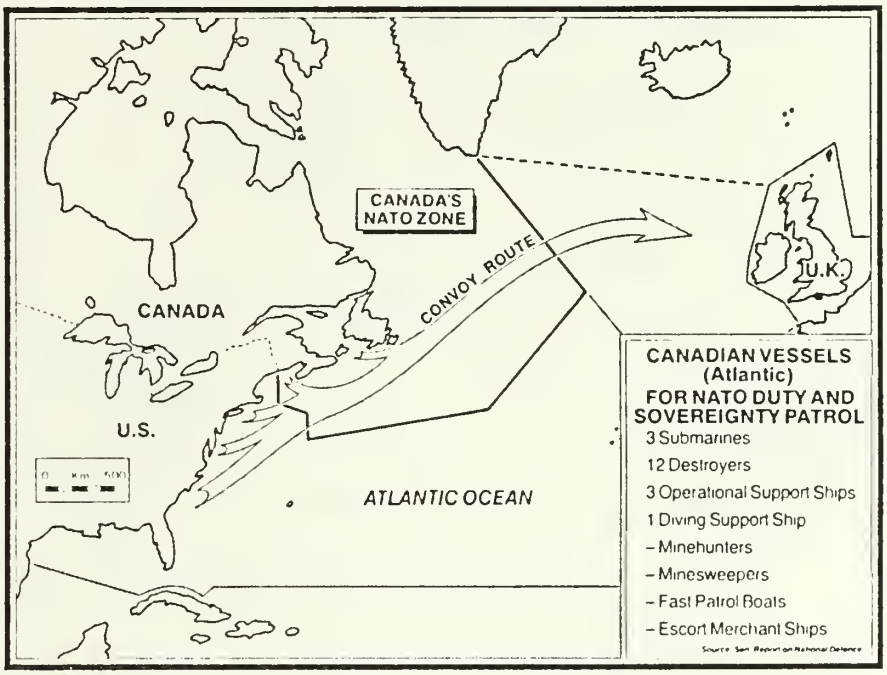

Figure 9. Canada's NATO Naval Zone [Ref. 16: p. 156]

of the North Atlantic so vital to NATO, Soviet submarines must pass through the potential barrier of the Greenland-Iceland-United Kingdom (GIUK) gap before gaining the waters of the Atlantic. The GIUK gap is "guarded" by the Sound Surveillance System (SOSUS), a system of fixed, passive sensors which is reasonably successful at detecting and monitoring submarine transits. Canada pariicipates in this system under Canada-United States Basic Security Plan and has access to the intelligence data provided by SOSUS. (Canada does not contribute to the Pacific SOSUS systems and does not benefit as much from the acquired information.) The three existing Canadian

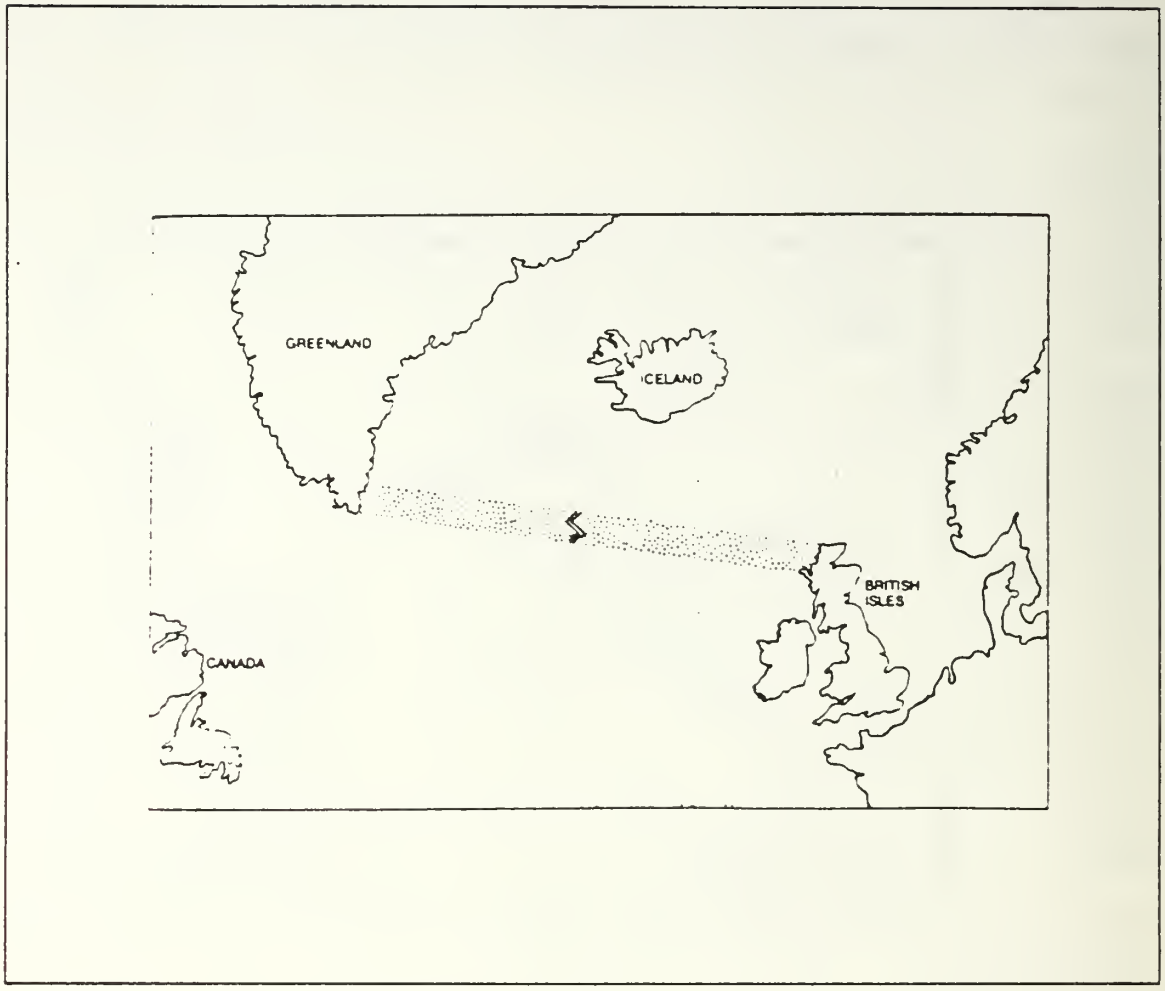

Figure 10. The GIUK Gap [Ref. 31: p. 9]

conventional submarines are assigned to "barrier" operations to protect the trans-Atlantic sea routes and the proposed SSNs would fullfill a similar role. Intelligence provided to the patrolling SSNs through SOSUS and other sources contribute to the successful prosecution of hostile submarines. The objective is to seek out the Soviet weapons platform a thousand miles from its intended launch point , long before the submarine can fire its missiles at the convoy or strategic target. As it is true for the Pacific, the best way to meet Canadian needs and responsibilities in the Atlantic is the nuclear powered submarine.

V. CANADIAN SSNS--GOOD FOR CANADA--GOOD FOR CANADA'S ALLIES

A. A CHANGE IN CANADA'S MARITIME FORCES: THE ADDITION OF SSNS

Through the public forum of the 1987 White Paper, the government of Canada has announced its intentions to make major changes to Canada's military and to her defense posture. Among other things, the White Paper publicizes the planned acquisition of ten to twelve nuclear powered submarines. These submarines will, the government hopes, help assert Canada's claim of sovereignty in the waters of the Canadian Archipelago including the Northwest Passage. The SSNs will also have a clearly martial role in support of national security in the face of potential Soviet aggression. According to the White Paper, Canada intends to protect her interests in the Pacific, the Atlantic, and the Arctic. If the plans outlined in the White Paper are fully implemented, Canada and her closest ally and neighbor, the United States, must establish an effective working relationship in the three oceans in which they share security interests. This need is above and beyond the final answer to the sovereignty question.

1. The 1987 White Paper

The 1987 White Paper outlines some basic changes to Canada's military and the deployment of her forces. Canada intends to show a real increase in her defense expenditures. This is welcome news because Canada holds a dismal record in that respect. News which is not so welcome, is Canada's decision to abandon her commitment to reinforce Norway in times of crises. This is a matter of grave concern not only to Norway herself but also to the United States and NATO as a whole. Canada's troop commitment will shift to the central front as soon as another NATO ally can assume Canada's former commitments in Norway. One feature of the White Paper has received more attention than any other. That feature is Canada's decision to build buy SSNs. The projected cost of this program is $8 billion (Canadian) over a fifteen to twenty year period. The submarine will be purchased from either the French or the British. The choice should be made in the near future. Canada has stated her intention to use those submarines in support of her claims to sovereignty in her coastal archipelago and in support of her security needs in all three oceans which form a large percentage of her borders. The decision was made in favor of nuclear powered submarines because of their far superior speed and maneuverability over the capabilities

of a diesel submarine. It is not a coincidence that a nuclear powered submarine is the only vessel which can operate under ice.

2. A Question of Sovereignty

Canada and the United States are in complete opposition on the matter of sovereignty in the Northwest Passage. It is not possible for either to ever fully accept the other's position on this issue. For Canada it is a matter of national pride and part of her romantic view of "the North." The United States has a more pragmatic orientation as a maritime nation unwilling to accept restrictions on her freedom of navigation in international waters. It is doubtful that either side would be willing to take this issue to the World Court because neither side can afford to lose. International law appears to favor the position of the United States that the Northwest Passage is a strait used for international navigation and subject to the right of transit passage. No matter how convincing these legal arguments may be, they are not likely to change Canada's stance on this issue. Canada claims sovereignty over the waters of the Canadian Archipelago including the Northwest Passage through the use of straight baselines to enclose her coastal archipelago as internal waters without even the right of innocent passage and through historic title. Neither of these are presently supported in customary international law.

3. Canada's Three Oceans and the Soviet Threat

Canada has three oceans on her shores and has economic interests and national security responsibilities in all of them. The Arctic Ocean is an area of increasing strategic importance for both the East and the West. The ice-covered waters provide a haven for Soviet SSBNs in their own homewaters. The Soviet SSNs freely patrol the Arctic and hold an additional threat for Canada and the US in the form of SLCMs. These weapons, while still a dangerous anti-surface, anti-shipping weapon, now can be be targeted for objectives on land in support of tactical objectives. A major concern is the possible employment of the Soviet SSNs in waters adjacent to the Arctic--in the Atlantic and in the Pacific.

Canada continues to hold that her security is intimately bound to that of NATO and western Europe and for that reason the Canadian Atlantic fleet is given first priority. Traditionally, Canada has provided escorts for convoys carrying supplies essential to the resupply and survival of NATO. These convoys are primarily at risk from hostile submarines. For NATO to fight beyond its inplace munition, the Atlantic SLOCs must remain free of Soviet interdiction.

Canada has not really thought of herself as a Pacific nation in the past. Today, however, with the dramatic increase in two-way trade between Canada and the nations of the Pacific Rim, Canada finds herself more interested in and more involved in the security of this geostrategic area. Both the US and the Soviet Union have increased their presence in this area which is of great economic and strategic significance. Maintaining open sea lines of communication in the Pacific is of great importance to Canada and her neighbor, the United States. As in the case of the Atlantic, the greatest threat to the SLOCs so important to Canada and her allies are Soviet submarines.

The best anti-submarine weapon is another submarine. In all three ocean areas in which Canada has a vested interest, the primary threat to the security of Canada and her allies arises from Soviet submarines. If Canada wishes to more completely fulfill her own security needs and lessen whatever dependence she has on her allies in this, the decision to acquire SSNs is a big step in that direction. For Canada's allies, this strengthening of Canada's military capabilities is most welcome.

B. ALTERNATE FUTURES

Science fiction writers and futurologists have long been fascinated with the possibility of alternate futures--ones arising from choices made at critical points in history. What if the choice had been this instead of that, how would the present be different? For each choice or decision made, there is an alternate future resulting from a different choice. In a way, the United States needs to look at the alternate futures of Canada's decision to acquire SSNs.

Canada is a democracy and, like other democracies, the government must be elected by the people in order to hold power. This is an election year in Canada and the current government must be re-elected in order to remain in power and continue it's plans and policies. The present administration strongly advocates an increase in defense spending, a general up-grade of the military as a whole, and a greatly improved naval capability. Canada intends to acquire SSNS or at least the government headed by Prime Minister Mulroney intends to acquire SSNs. If he is victorious in the next election, he will have the chance to carry out the plans identified in the 1987 White Paper. This includes the decision to acquire SSNs. The opposition parties in Canada feel very differently about the proposed SSN fleet. Some see it as an aggressive, warlike move which does not reflect Canada's peaceful motives. For some Canadians, nuclear power is the same thing as nuclear weapons and they want no part of it. Others would simply rather see the money spent on child care programs. If either the Liberal Party or the NDP coalition

government gains power in the next election, it is entirely possible the decision to acquire SSNs would be reversed. This would effectively remove the possibility of a US submarine bumping into a Canadian one conducting a sovereignty patrol. The problem would be solved before it even began.

Before any victory celebration takes place, is this really in the best interest of the United States? At a time when defense expenditures are facing a freeze and the US can no longer single-handedly defend the free world, the US is actively encouraging her allies to assume a greater share of their own defense burden. Japan is an excellent example of an ally the US is encouraging to increase its defense budget. In spite of the fact that the US may feel the money would be better spent on improvements to Canada's conventional forces, the Canadians are at least willing to make a greater contribution to the defense of North America--on their own terms.

The decision has been made. Continued US opposition to Canada's plans will certainly cause more harm than good. Such opposition would certainly strengthen the hand of those who argue against close Canadian relations with the US. It is not smart to deliberately contribute to anti-American sentiment. Canada is doing exactly what the US has encouraged her to do--she just isn't doing it exactly the way the US would like for her to.

The United States should actively encourage this proposed Canadian fleet and assist in any way that Canada would like for her to. This would allow Canada to benefit from the US experience and technical expertise; it would allow the US to assist in putting into place a safe system for nuclear-powered submarines. The safety record of the US in this regard is without equal. Active support of this close ally would contribute to the compatibility of the two SSN fleets.

Canada's need for SSNs is just as real as the United States' need although those needs differ slightly. No one can argue that the two neighbors do not share common security and defense requirements in the Atlantic, the Pacific, and the Arctic Oceans. Canada's SSNs can, in fact, actively complement the United States' operations in these three oceans. But, in order for this to happen, the United States and Canada must work together.

On the sovereignty issue there will be no meeting of the minds. Canada claims complete sovereignty over the waters of the Canadian Archipelago including the Northwest Passage with no right of innocent passage much less transit passage. She makes these claims based on the use of straight baselines to enclose internal waters and

on historic title. Canada has a very large emotional investment in this matter and will not concede her claim. The United States is a maritime nation with global interests and cannot allow restrictions to be placed on its mobility. The US regards the Northwest Passage as a strait used for international navigation and subject to the right of transit passage. The position of the US on the subject is as inflexible as Canada's. What must be done then is to learn to work around these opposing viewpoints. As already discussed, an agreement on Arctic cooperation was signed between Canada and the US in January. This agreement does not even pretend to solve the dispute. Instead, it offers a way for both parties to feel as if they have won a victory without an unacceptable loss. It offers a "legal" basis for cooperation and joint operations without changing the position of either Canada or the US with regard to the Northwest Passage.

Such joint operations will require a formal working relationship. The United States and Canada have been very successful in establishing such relationships. The North American Aerospace Defense Command (NORAD) has proven to be an effective way to maximize the air defense of North America. There is no reason why a similar type of organization could not be utilized. At the same time, establishing a new command of this type would be expensive and may not be necessary. There are organizations already inplace which could fill this role. An example of this is the Canadian American Permanent Joint Board of Defense. On the east coast, these two NATO members are under the command of SACLANT. Redefining or expanding the role of such organizations may be all that is needed.

Canada and the United States have a formidable partnership in insuring the safety and security of North America. Canada's decision to acquire SSNs and participate more fully in the defense of her homeland should be welcomed. The emphasis on the utilization of the proposed SSNs to enhance Canada's sovereignty claims in the Northwest Passage could be a crucial part of gathering public support for increased defense spending. If two such close neighbors and allies are unable to resolve their differences, then the ability of either to successfully conduct foreign affairs is in question. The United States should welcome the strengthening of Canada's military capability and offer whatever assistance is desired as Canada implements the proposal to acquire SSNs. For her part, Canada should seek a way to actively complement and enhance the security operations the United States already has in place.

APPENDIX A. ANALYSIS OF SELECTED POSSIBLE CRUISE MISSILE LAUNCH POSITIONS

AREA	WATER DEPTH	ICE COVER	1600 km RANGE	3000 km RANGE	ASSESSMENT
A. Amundsen Gulf	300 m	Over 5,10th except July thru Sept.	NWS sites and F18 FOBs.	Major cities between Calgary, Winnipeg and in Montana, North Dakota and northern Minnesota.	Of limited potential except summer or if the C. Bathurst polynya is open.
B. McClure Strait	400 m	Over 5,10ths all year.	NWS sites and F18 FOBs.	Major cities between Calgary and Thunder Bay and in Montana, the Dakotas, Minnesota and norhtern Wisconsin.	Unusable because of ice cover.
C. McClintock Channel	50 m	Over 5,10ths all year.	NWS sites and F18 FOBs.	Major cities between Calgary and North Bay and in Montana, the Dakotas, Minnesota, Wisconsin and northern Michigan.	Unusable because of ice cover.
D. Gulf of Boothia	200 m	Over 5,10ths except July thru Sept.	NWS sites and F18 FOBs	Most major areas north of a line thru Chicago.	Good potential during summer, but difficult entry.

AREA	WATER DEPTH	ICE COVER	1600 km RANGE	3000 km RANGE	ASSESSMENT
E. Lancaster Sound	700 m	Over 5/10ths except July thru Sept.	NWS sites and F18 FOBs.	Major cities between Calgary and Quebec except southern Ontario, Ottawa, and Montreal.	Unusable to the south because of mountains on Baffin Island.
F. Smith Sound	500 m	As Lancaster Sound.	As Lancaster Sound.	Major western cities.	Unusable.
G. Davis Strait and Labrador Sea	500 m	Less than 5/10ths all year.	Some NWS sites.	Most eastern cities and areas north of New York.	Ideal location for a year round patrol area.
H. Approaches to Hudson Bay	500 m	Over 5/10ths except July thru Sept.	Some NWS sites and F18 FOBs.	Extensive in the northeastern part of the continent.	Good summer position, reached from either the Arctic or the Atlantic.
I. Hudson Strait	200 m	As for Hudson Bay	As for Hudson Bay	Extensive in the east and central Canada and US.	Good summer position.

NOTES

1. It has been assumed that a submarine will be able to find sufficient water to launch its missiles when there is less than 5/10ths ice cover.

2. Terrain-matching limitations on missiles have not been taken into account other than to assume that missiles fired from Amundsen Gulf would not cross the Rockies and that Baffin Island could not be crossed by missiles fired from areas lying to the north.

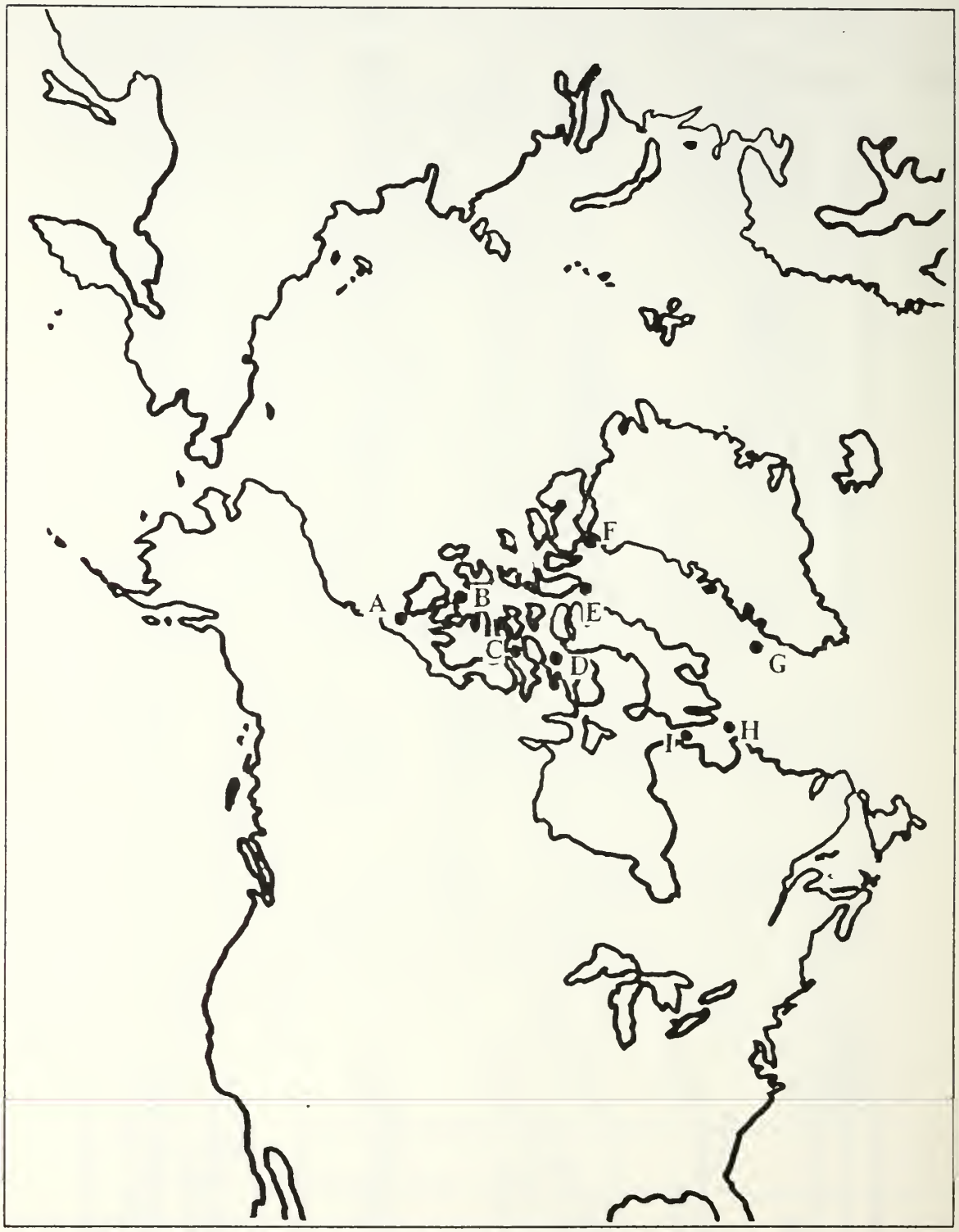

Figure 11. Possible Cruise Missile Launch Sites [Ref. 28: Annex B]

APPENDIX B. AGREEMENT BETWEEN THE GOVERNMENT OF THE UNITED STATES AND THE GOVERNMENT OF CANADA ON ARCTIC COOPERATION

1. The Government of the United States of America and the Government of Canada recognize the particular interests and responsibilities of their two countries as neighboring states in the Arctic.

2. The Government of Canada and the Government of the United States also recognize that it is desirable to cooperate in order to advance their shared interests in Arctic development and security. They affirm that navigation and resource development in the Arctic must not adversely affect the unique environment of the region and the well-being of its inhabitants.

3. In recognition of the close and friendly relations between their two countries, the uniqueness of ice-covered maritime areas, the opportunity to increase their knowledge of the marine environment of the Arctic through research conducted during icebreaker voyages, and their shared interest in safe, effective ice breaker navigation off their Arctic coasts:

- The Government of the United States and the Government of Canada undertake to facilitate navigation by their icebreakers in their respective Arctic waters and to develop cooperative procedures for this purpose;
- The Government of Canada and the Government of the United States agree to take advantage of their icebreaker navigation to develop and share research information, in accordance with generally accepted principles of international law, in order to advance their understanding of the marine environment of the area;
- The Government of the United States pledges that all navigation by U.S. icebreakers within waters claimed by Canada to be internal will be undertakes with the consent of the Government of Canada.

4. Nothing in this agreement of cooperative endeavor between Arctic neighbors and friends nor any practice thereunder affects the respective positions of the Governments of the United States and of Canada on the Law of the Sea in this or other maritime areas or their respective positions regarding third parties.

5. This Agreement shall enter into force upon signature. It may be terminated at any time by three months' written notice given by one Government to the other.

IN WITNESS WHEREOF, the undersigned, duly authorized to that effect, have signed this Agreement.

DONE in duplicate, at Ottawa, this 11th day of January, 1988, in the English and French languages, each version being equally authentic.

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